# INSTALLATION RESTORATION PROGRAM



# PRELIMINARY ASSESSMENT
# 182nd TACTICAL AIR SUPPORT GROUP
# ILLINOIS AIR NATIONAL GUARD
# PEORIA, ILLINOIS

AIR NATIONAL GUARD





**HAZWRAP SUPPORT CONTRACTOR OFFICE**
Oak Ridge, Tennessee 37831
Operated by MARTIN MARIETTA ENERGY SYSTEMS, INC.
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# INSTALLATION RESTORATION PROGRAM

## PRELIMINARY ASSESSMENT
## 182nd TACTICAL AIR SUPPORT GROUP
## ILLINOIS AIR NATIONAL GUARD
## PEORIA, ILLINOIS

Prepared For

**HAZARDOUS WASTE**
**REMEDIAL ACTION PROGRAM**

**MARTIN MARIETTA**
**ENERGY SYSTEMS, INC.**

Oak Ridge, Tennessee

and

**NATIONAL GUARD BUREAU**
**NGB/DEVR**

Andrews Air Force Base, Maryland

June 1990

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## EXECUTIVE SUMMARY

### INTRODUCTION

Engineering-Science, Inc. (ES) was retained to conduct the Installation Restoration Program (IRP) Preliminary Assessment of the 182nd Tactical Air Support Group (TASG), Illinois Air National Guard, Greater Peoria Airport, Peoria, Illinois.

The Preliminary Assessment included:

- An on-site visit including interviews with 31 base personnel (former and active) and field surveys by ES representatives from 30 November through 02 December 1988;
- The acquisition and analysis of information on past hazardous materials use, and waste generation and disposal at the Base;
- The identification and assessment of three sites (including sampling and analysis of soils at two sites) on the Base which may have been contaminated with hazardous materials or hazardous waste; and
- The acquisition and analysis of available geologic, hydrologic, meteorologic, and other environment data from federal, state, and local agencies.

### MAJOR FINDINGS

The Air National Guard has utilized hazardous materials and generated small amounts of wastes in mission oriented operations and maintenance at the 182nd TASG since 1947.

Operations that have used and disposed of hazardous materials include: aircraft maintenance, aerospace ground equipment maintenance, vehicle maintenance, and petroleum, oils, and lubricants (POL) management and distribution. Varying quantities of waste POL products, paints, thinners, strippers, and solvents have been generated and disposed by these activities.

Interviews with base personnel and the field surveys resulted in the identification of three sites of possible contamination, all of which exhibit the potential for contaminant presence and possible migration.

## CONCLUSIONS

Three sites are potentially contaminated and require further investigation. These sites have been rated and assigned a Hazard Assessment Score utilizing the U.S. Air Force Hazard Assessment Rating Methodology (HARM).

**Site 1 (HARM Score = 54)**

Solvent-type wastes were reportedly deposited into open filter beds that were once located south of Facility 3. This disposal practice occurred sometime between 1951 and 1963. Quantities of wastes deposited are unknown. Additionally, a 1958 sanitary sewer system drawing shows the Base Motor Pool, a potential source of contaminants, tied into these beds. This site has been rated and has received a HARM score of 54.

**Site 2 (HARM Score = 54)**

Trichloroethylene and other solvent-type wastes were reportedly poured onto the ground along the base boundary near the aircraft apron. This disposal practice commenced at an unknown date and continued until the mid-1970's. Initial soil sampling did not detect any contaminants of concern. This site has been rated and has received a HARM score of 54.

**Site 3 (HARM Score = 54).**

Trichloroethylene and other solvent-type wastes were reportedly poured onto the ground in the grass between the aircraft apron and the fuel truck parking area. This disposal practice commenced at an unknown date and continued until the mid-1970's. Initial soil sampling did not detect any contaminants of concern. This site has been rated and has received a HARM score of 54.

## RECOMMENDATIONS

Further IRP investigations are recommended for the three identified sites.

# SECTION 1
# INTRODUCTION

# SECTION 1
# INTRODUCTION

## 1.1 BACKGROUND AND AUTHORITY

The Air National Guard (ANG), due to its primary mission of defense of the United States, has long been engaged in a wide variety of operations utilizing toxic and hazardous materials. Federal, state, and local governments have developed strict regulations requiring disposers of hazardous materials to identify the locations and contents of past disposal sites, and to take action to eliminate potential hazards in an environmentally responsible manner. The primary Federal legislation governing disposal of hazardous waste is the Resource Conservation and Recovery Act (RCRA) of 1976, as amended. Under Section 6003 of the Act, Federal agencies are directed to assist the U.S. Environmental Protection Agency (U.S. EPA). Under Section 3012, state agencies are required to inventory past disposal sites, and Federal agencies are required to make the necessary information available to the requesting agencies.

To assure compliance with these hazardous waste regulations, the Department of Defense (DOD) developed the Installation Restoration Program (IRP). The current DOD IRP policy is contained in Defense Environmental Quality Program Policy Memorandum (DEQPPM) 81-5, dated 11 December 1981 and implemented by Air Force message dated 21 January 1982. DEQPPM 81-5 reissued and amplified all previous directives and memoranda on the IRP. DOD policy is to identify and fully evaluate suspected problems associated with hazardous waste contamination, and to control hazards to health and welfare that resulted from these past operations. The IRP is the basis for response actions on ANG installations under the provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, commonly known as "Superfund," clarified by Executive Order 12316. CERCLA is the primary legislation governing remedial action at past hazardous waste disposal sites.

Although the IRP and the U.S. EPA Superfund program were essentially the same, differences in the definition of program phases and lines of authority resulted in some confusion between DOD and State and Federal regulatory agencies. These

difficulties were rectified via passage of the Superfund Amendments and Reauthorization Act (SARA, PL-99-499) of 1986. On 23 January 1987 Presidential Executive Order EO 12580 was issued. EO 12580 effectively revoked EO 12316 and implemented the changes promulgated by SARA. The most important changes resulting from SARA include the following:

- Section 120 of SARA provides that federal facilities, including those in the DOD, are subject to all provisions of CERCLA/SARA concerning site assessment, evaluation under the National Contingency Plan (NCP) [40 CFR Part 300], listing on the National Priorities List (NPL), and removal/remedial actions. DOD must therefore comply with all the procedural and substantive requirements (guidelines, rules, regulations, and criteria) promulgated by the U.S. EPA under Superfund authority.
- Section 211 of SARA provides continuing statutory authority for DOD to conduct its IRP as part of the Defense Environmental Restoration Program (DERP). This was accomplished by adding Chapter 160, Sections 2701-2707 to Title 10 United States Code (10 USC 160).
- SARA also stipulated that terminology used to describe or otherwise identify actions carried out under the IRP shall be substantially the same as the terminology of the regulations and guidelines issued by the U.S. EPA under their Superfund authority.
- As a result of SARA, the operational activities of the IRP are currently defined and described as follows:

  **Preliminary Assessment (PA).** A records search designed to identify and evaluate past disposal and spill sites which might pose a potential or actual hazard to public health, welfare, or the environment.

  **Site Investigation / Remedial Investigation / Feasibility Study (SI/RI/FS).** The Site Investigation consists of field activities designed to confirm the presence or absence of contamination at the potential sites identified in the PA. The Remedial Investigation consists of field activities designed to quantify and identify the potential contaminant, the extent of the contaminant plume, and the pathways of contaminant migration. The Feasibility Study consists of the review and screening of remedial alternatives and a detailed evaluation of remaining alternatives with respect to technical feasibility, cost, public health impacts,

environmental impacts, and regulatory requirements. If applicable, a public health evaluation is performed to analyze the collected data. Field tests are required which may necessitate the installation of monitoring wells or the collection and analysis of water, soil and/or sediment samples. Careful documentation and quality control procedures, in accordance with CERCLA and SARA guidelines, ensure the validity of data. Hydrogeologic studies are conducted to determine the underlying strata, groundwater flow rates, and direction of contaminant migration. The findings from these studies result in the selection of one or more of the following options:

- **No Further Action** - Investigations do not indicate levels of contamination which pose a significant threat to human health or the environment. The site does not warrant further IRP action and a Decision Document (DD) will be prepared to close out the site.

- **Long-Term Monitoring** - Evaluations do not detect sufficient contamination to justify costly remedial actions. Long-term monitoring may be recommended to detect possible future problems.

- **Feasibility Study** - Investigation confirms the presence of contamination that may pose a threat to human health and/or the environment, and remedial action is indicated. The Feasibility Study is therefore designed and developed to identify and select the most appropriate remedial action. The FS may include individual sites, groups of sites, or all sites on an installation. Remedial alternatives are evaluated based on engineering and cost feasibility, state and federal regulatory requirements, public health effects, and environmental impacts. The end result of the FS is the selection of the most appropriate remedial action by the ANG with concurrence by state and federal regulatory agencies.

- **Remedial Design/Remedial Action (RD/RA)** - The RD involves formulation and approval of the engineering designs required to implement the selected remedial action. The RA is the actual implementation of the remedial alternative. It refers to the accomplishment of measures to eliminate the hazard; or, at a

minimum, reduce it to an acceptable limit. Covering a landfill with an impermeable cap, pumping and treating contaminated groundwater, installing a new water distribution system, and in-situ biodegradation of contaminants in soils are examples of remedial measures that might be selected. In some cases, after the remedial actions have been completed, a long-term monitoring system may be installed as a precautionary measure to detect any contaminant migration or to document the efficiency of remediation.

- **Immediate Response Actions** - At any point, it may be determined that a former waste disposal site poses an immediate threat to public health or the environment, thus necessitating prompt removal of the contaminant. Immediate action, such as limiting access to the site, capping or removing contaminated soils, or providing an alternate water supply may suffice as effective control measures. Sites requiring immediate response action maintain IRP status in order to determine the need for additional remedial planning or long-term monitoring. Removal measures or other appropriate remedial actions may be implemented during any phase of an IRP project.

## 1.2 PURPOSE

The purpose of this PA is to identify and evaluate suspected or potential problems associated with past waste handling procedures, disposal sites, and spill sites existing on the base of the 182nd Tactical Air Support Group, Illinois Air National Guard, Greater Peoria Airport (hereinafter referred to as the Base). A new base is currently under construction; however, the new base was not evaluated because such an evaluation was beyond scope of this PA.

The potential for problems relating to releases of hazardous contaminants was evaluated by visiting the Base, reviewing existing environmental data, analyzing base records concerning the use and generation of hazardous materials, and conducting interviews with present and past base personnel who had knowledge of past waste disposal techniques and handling methods. Pertinent information collected and analyzed as part of this PA included a records search of the history of the Base, the local geological, hydrogeological, and meteorological conditions that might influence migration of contaminants, and that might indicate environmentally

sensitive ecosystems. Additionally, soil samples were obtained at the direction of HAZWRAP with concurrence of NGB for chemical analysis at three sites of suspected contamination.

## 1.3 SCOPE

The scope of the PA was limited to the identification of sites at, or under primary control of, the Base and nearby potential receptors. The PA included:

- Review of base records.
- Interviews with personnel familiar with past waste generation and disposal activities.
- Survey of types and quantities of waste generated.
- Description of the environmental setting at the Base.
- Review of past waste disposal practices and methods.
- Reconnaissance of field conditions.
- Collection of pertinent information from federal, state, and local agencies.
- Sampling and analysis of soils to determine presence or absence of contaminants at three sites.
- Assessment of the potential for contaminant migration.
- Development of recommendations for follow-on actions.

Engineering-Science, Inc. (ES) performed the on-site portion of the records search from 30 November through 02 December 1988. The following team of professionals was involved: Mr. Philip C. Perley, ES Geologist; Mr. Eric J. Haydu, ES Chemical Engineer; and Mr. Thomas M. Roth, ES Geological Engineer. Biographical information on the three ES individuals is presented in Appendix A. Assisting with the records search and acting as points of contact were Mr. Henry H. Lowman, National Guard Bureau; Mr. M. Carl Wheeler, Martin-Marietta; and Capt. Steven T. Ford, Base Civil Engineering.

## 1.4 METHODOLOGY

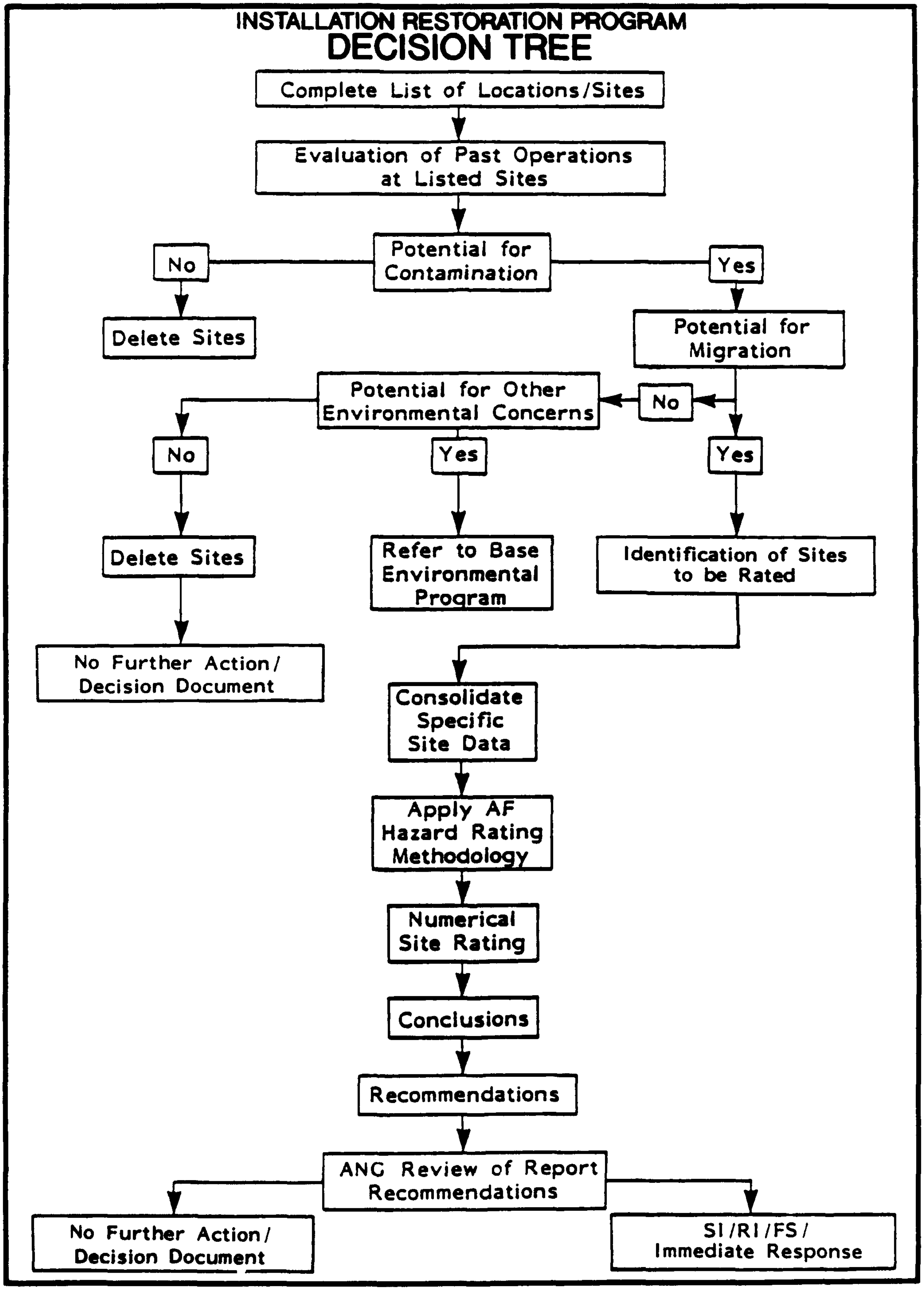
The methodology utilized in the Base PA began with a review of past and present industrial operations conducted at the installation. Information was obtained from available installation records as well as interviews with 31 past and present base employees from various operating areas.

Concurrently with the employee interviews, the applicable federal, state, and local agencies were contacted for pertinent study area related environmental data. The agencies contacted are listed in Appendix B.

The next step in the activity review was to identify all sources of hazardous waste generation and to determine the past management practices regarding the use, storage, treatment, and disposal of hazardous materials from the various sources on the Base. Included in this part of the activities review was the identification of known past disposal sites.

A tour of the Base and potential sites of contamination was made by the ES Project Team to gather site-specific information including: (1) general observations of existing site conditions; (2) visual evidence of environmental stress; (3) presence of nearby drainage ditches or surface waters; and (4) visual inspection of surface water bodies for any obvious signs of contaminant or leachate migration.

A decision was then made, based on all of the above information, whether a potential hazard to human health or the environment existed at any of the potential sites using the Flow Chart shown in Figure 1.1. For those sites where no potential for contamination was judged to exist, the site was deleted from further evaluation. For those sites where potential for contaminant migration was suspected, the need for further evaluation was made by considering site-specific conditions. If no further evaluation was determined necessary, the site was either 1) referred to the Base environmental program for appropriate action or 2) deleted from further evaluation and, if necessary, a Decision Document for No Further Action was prepared. If a site had the potential for contaminant migration, it was evaluated and rated using the USAF Hazard Assessment Rating Methodology (HARM). The HARM score is a resource management tool which indicates the relative potential for adverse effects on health or the environment at each site evaluated.


INSTALLATION RESTORATION PROGRAM
DECISION TREE
Complete List of Locations/Sites
Evaluation of Past Operations at Listed Sites
Potential for Contamination
No
Yes
Delete Sites
Potential for Migration
Potential for Other Environmental Concerns
No
No
Yes
Yes
Delete Sites
Refer to Base Environmental Program
Identification of Sites to be Rated
No Further Action/ Decision Document
Consolidate Specific Site Data
Apply AF Hazard Rating Methodology
Numerical Site Rating
Conclusions
Recommendations
ANG Review of Report Recommendations
No Further Action/ Decision Document
SI/RI/FS/ Immediate Response

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# SECTION 2
# INSTALLATION DESCRIPTION

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# INSTALLATION DESCRIPTION

## 2.1 LOCATION

The Base, located on the east side of the Greater Peoria Airport, Peoria, Illinois, is five miles southwest of the Peoria central business district and two miles northwest of Bartonville, Illinois. The Base legal description is the East 1/2 of the East 1/2, Section 22, Township 8 North, Range 7 East, Peoria County, Illinois (Figures 2.1 and 2.2). Access to the Base is along Airport Road approximately one mile south of I-474. The Base occupies 52 acres (Figure 2.3). A listing of base facilities including facility number and scope is presented in Table 2.1. The host unit at the Base is the 182nd Tactical Air Support Group (TASG). There are 225 full-time employees; approximately 950 Guardsmen use the Base one weekend a month.

## 2.2 ORGANIZATION AND HISTORY

The Base was first used on 21 June 1947, the date when the 182nd TASG was originally organized and Federally recognized as the 169th Fighter Squadron and has been in continuous operation since. The unit was initially equipped with eight P-51 fighters, four AT-6 trainers, and one B-26 tow target plane. On 01 December 1952, the unit designation was changed to the 169th Fighter Bomber Squadron. The 169th Fighter Bomber Squadron was redesignated as the 169th Fighter Interceptor Squadron on 22 June 1955. Squadron pilots began a transition into the F-84 Fighter Interceptor aircraft during field training in July of 1958 at Alpena, Michigan; the unit received the first delivery of F-84 aircraft in August of 1958.

On 10 November 1958, the unit designation was changed to the 169th Tactical Fighter Squadron (Day, Special Delivery) and was assigned to the 131st Tactical Fighter Wing, St. Louis, Missouri. On 01 September 1961, the 169th Tactical Fighter Squadron was alerted for activation and started an accelerated training program and was ordered into Federal service during the Berlin crisis on 01 October 1961. While on active duty, the unit participated in several combat training exercises conducted at England Air Force Base, Louisiana, and confirmed its

combat rating. On 20 August 1962, the unit was released from active duty and reverted to State control.

The unit designation was changed to the 169th Tactical Fighter Squadron and assigned on 15 October 1962 to the newly formed Headquarters 182nd Tactical Fighter Group, namely, 182nd National Squadron, 182nd Combat Support Squadron, 182nd United States Air Force (USAF) Dispensary, and the 169th Tactical Fighter Squadron, which assumed all support functions.

On 15 May 1969 the 182nd Tactical Fighter Group was deactivated and on 16 May 1969 activated as the 182nd TASG and assigned directly to the 12th Air Force. The mission of the Group was to provide forward air control support for ground forces in combat with interim U-3A/B aircraft. By the end of January 1970, the 182nd TASG converted to 0-2A aircraft.

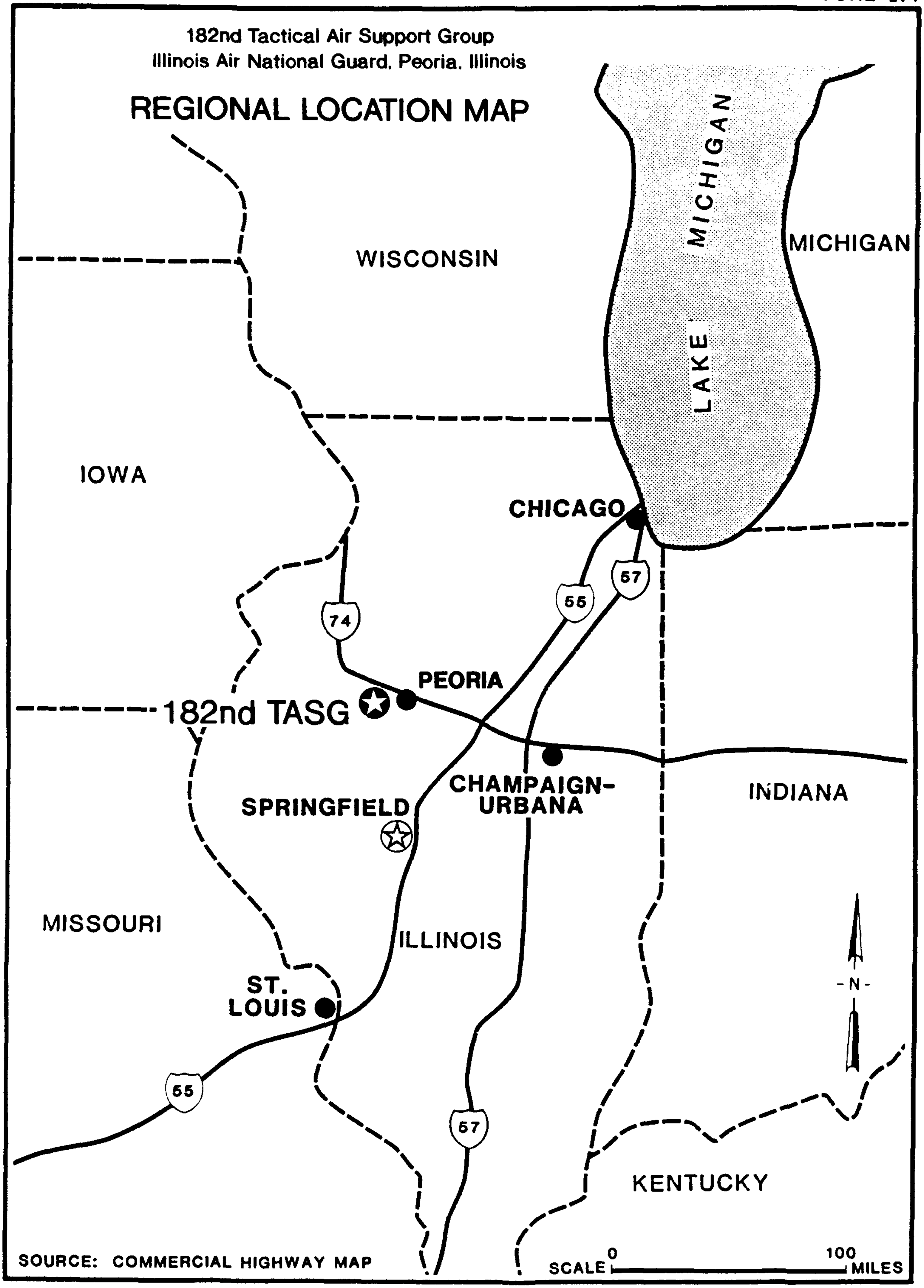
In early 1980, the 182nd TASG converted to the OA-37B aircraft, reaching combat ready status in the new aircraft on 01 June 1980. The Group's mission has remained the same since then.

A new Base is currently under construction west of the existing facility. Upon completion of the new Base, the ANG will vacate the existing facility and the Army National Guard will become the host organization.

**TABLE 2.1**
**FACILITY LISTING**
**182ND TACTICAL AIR SUPPORT GROUP**
**ILLINOIS AIR NATIONAL GUARD**
**PEORIA, ILLINOIS**

| Facility Number | Facility Name | Scope | |
|---|---|---|---|
| 1 | Hanger | 23,621 | sq. ft. |
| 2 | Aircraft Maintenance Shop | 15,739 | sq. ft. |
| 3 | Base Supply Warehouse | 11,830 | sq. ft. |
| 4 | Automotive Maintenance and Motor Pool | 3,293 | sq. ft. |
| 5 | Egress Shop | 1,288 | sq. ft. |
| 6 | Fire Station | 2,500 | sq. ft. |
| 7 | Old Operation and Training Facility | 21,217 | sq. ft. |
| 8 | Paint Storage | 300 | sq. ft. |
| 9 | Main Gate House | 135 | sq. ft. |
| 11 | Boiler Room | 1,700 | sq. ft. |
| 12 | Aircraft, Aerospace and Ground Equipment (AGE) Shop | 2,240 | sq. ft. |
| 13 | Main Communications Electronics Maintenance/AGE Shop | 4,880 | sq. ft. |
| 14 | Recruiting | 1,100 | sq. ft. |
| 15 | Supply & Equipment Facility | 12,800 | sq. ft. |
| 16 | Operation and Training Facility | 18,600 | sq. ft. |
| 17 | Jeep Storage Shed | 4,852 | sq. ft. |
| 18 | Operations Facility | 19,690 | sq. ft. |
| 19 | Base Civil Engineering Facility | 9,846 | sq. ft. |
| 20 | Corrosion Control | 2,680 | sq. ft. |
| 22 | Aircraft Engine Inspection and Repair Facility | 14,000 | sq. ft. |
| 23 | Weapons Release Shop | 10,755 | sq. ft. |
| 24 | Combat Arms Training Management | 607 | sq. ft. |
| 25 | Mobility Facility | 623 | sq. ft. |
| 26 | Civil Engineering Storage | 1,108 | sq. ft. |
| 27 | Oxygen Storage | 400 | sq. ft. |
| 80 | Munitions Maintenance and Storage Facility (remote) | 6,240 | sq. ft. |
| 103 | POL and Operations Storage JP-4 | 2,643 | barrels |
| 124 | Power Check Pad | 1,065 | sq. yds. |
| 125 | Engine Test Cell | 720 | sq. yds. |

FIGURE 2.1

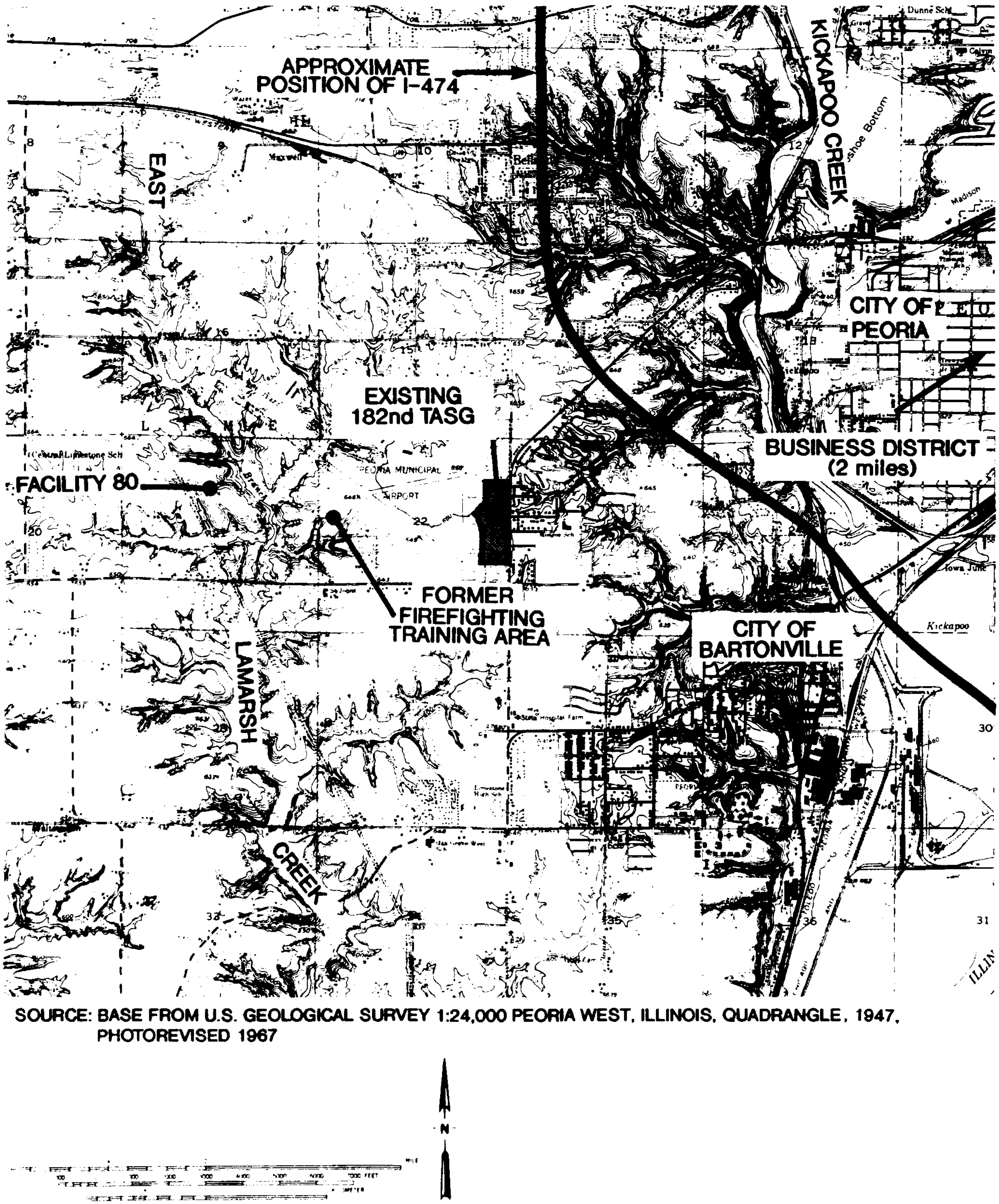





ES ENGINEERING-SCIENCE

182nd Tactical Air Support Group
Illinois Air National Guard, Peoria, Illinois

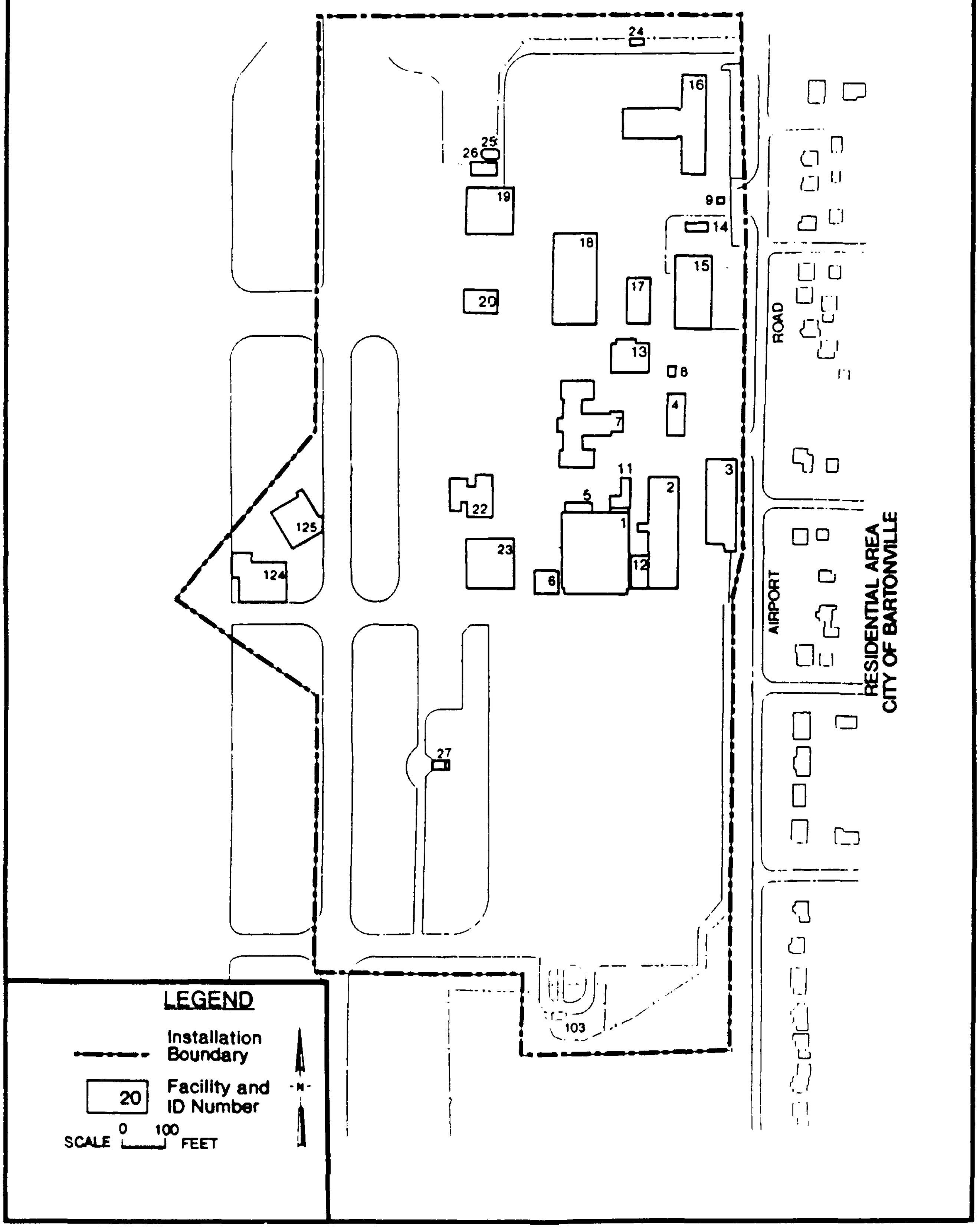
# AREA LOCATION MAP




SOURCE: BASE FROM U.S. GEOLOGICAL SURVEY 1:24,000 PEORIA WEST, ILLINOIS, QUADRANGLE, 1947, PHOTOREVISED 1967

182nd Tactical Air Support Group
Illinois Air National Guard, Peoria, Illinois

# BASE SITE MAP




ES ENGINEERING-SCIENCE

# SECTION 3
# ENVIRONMENTAL SETTING

# SECTION 3
# ENVIRONMENTAL SETTING

## 3.1 GEOGRAPHY

The Base is located near the Illinois River in an area that is typically mid-continental in character. The area topography and physiography are those of the western forest prairie, and the ecosystem is that of a woodland prairie border which has been extensively altered by man. The Base is situated on level tableland, surrounded by well-drained and gently rolling terrain. Slopes of the tableland are less than two percent. However, within approximately one mile of the Base, steep slopes of up to 25 to 35 percent occur along major drainages. Relief near the major drainages is approximately 125 feet to 200 feet. The elevation of the Base is approximately 640 feet above mean sea level (MSL) and is 200 feet above the Illinois River. The Base is one mile west of the Illinois River Valley rim.

The Greater Peoria Airport is located immediately west of the Base. The area immediately east of the Base is zoned for residential use (GRW Engineers, 1985).

## 3.2 TOPOGRAPHY AND SURFACE WATER

The land surface of the Base slopes gently to the south and east in the area of the operational apron and to the east for the northern half of the Base. The elevation at the Base ranges from 653 feet above MSL on the north to 630 feet above MSL on the south. The Base is not within any 100-year flood-plains.

There are numerous drainage ditches throughout the Base. Storm sewers and surface run-off from the aircraft parking apron, aircraft defueling area, and the POL area discharge into the open drainage ditch on the eastern and southern boundaries along the base fence line. Storm sewers and surface run-off from the remaining base facility discharge into a branch of Kickapoo Creek through a moderately populated residential area. Kickapoo Creek ultimately discharges into the Illinois River. Maps indicating surface water drainage on the Base and for the regional area are presented in Figures 3.1 and 3.2, respectively. The Base storm sewer system is presented in Figure 3.3.

## 3.3 METEOROLOGY

Unless otherwise noted, the following climatological data are summarized from the Local Climatological Data, Narrative Climatological Summary, National Oceanic and Atmospheric Administration (1983).

The climate of the Peoria area is continental as indicated by its variable weather and wide range of temperatures. Mean monthly temperatures range from 24 degrees Fahrenheit (°F) during January to 75°F in July. The annual average temperature is 51°F. The maximum recorded temperature is 113°F (15 July 1936) and the minimum recorded temperature is -27°F (January 1884). The average date of the last spring-time freezing temperature is 16 April; the earliest average date of the fall freezing temperature is 21 October.

The average annual precipitation is 35.06 inches, and ranges from 23.18 inches to 53.26 inches (not included in this range is the 1988 data and its drought-related effects). Precipitation is heaviest from April through September and is lowest in mid-winter. Annual snowfall has ranged from 7.8 inches (1965-1966) to 51.6 inches (1978-1979). The average annual lake evaporation is approximately 33 inches (NOAA, 1979); the net precipitation is 2 inches.

The one year, 24-hour rainfall event is 2.75 inches (NOAA, 1977) and the maximum 24-hour rainfall event for the installation is 5.06 inches. These values indicate that there is a moderate to high potential for erosion and transport of surface contaminants from waste sites on the installation.

## 3.4 GEOLOGY

### 3.4.1 Stratigraphy

The Base is underlain by Quaternary-age loess. Underlying the loess are sedimentary rocks of Precambrian through Pennsylvanian age. These sedimentary rocks, in turn, are underlain by crystalline Precambrian rocks. A stratigraphic column of the younger formations (Cambrian through Quaternary) is displayed in Figure 3.4. This column does not distinguish between two Pleistocene units, the Pre-Kansan Sankoty Sand and the younger Peoria Loess of Wisconsin age, discussed later. No local geologic maps are available.

The stratigraphic succession from youngest to oldest lithified strata in the Peoria region is as follows (from Horberg et al, 1950):

Pennsylvanian system
    Carbondale Formation
Mississippian system
    Keokuk-Burlington Formation
Ordovician system
    Galena-Plattesville Formation
    St. Peter sandstone
Cambrian system
    Eau Claire Formation
    Mt. Simon sandstone
Pre-Cambrian(?)
    Fond du Lac (?) sandstone
Pre-Cambrian
    Granite and other crystalline rocks

Devonian- and Silurian-aged rocks occur in the Peoria region but they are not discussed in this report.

Composition of the underlying Precambrian crystalline rock is unknown. Believed to be overlying the Precambrian crystalline rock are the Precambrian Fond du Lac sandstone, the Cambrian Mt. Simon Sandstone, and the Cambrian Eau Claire Formation. In north-central Illinois, these units total approximately 2,000 feet in thickness. A well drilled in Fulton County, approximately 25 miles east of the Base, intersected 1,150 feet of Cambrian- and Ordovician-aged lithologies overlying the Eau Claire Formation. In this borehole, the uppermost lithology intersected was the Ordovician St. Peter Sandstone at a depth of 1,625 feet below the land surface. In the vicinity of the Base, the total stratigraphic thickness of the Galena-Plattesville Formation and younger formations is estimated to be 1,600 feet (Horberg et al, 1950). A 520-foot water well was drilled at the remote Facility 80 (Munitions Maintenance and Storage Facility), which is 1.5 miles west of the existing Base. This well was terminated in early Mississippian-aged limestones of the Keokuk-Burlington Formation (GRW Engineers, 1985).

The Carbondale Formation is the youngest Pennsylvanian unit present in the area and consists of limestone, shale, sandstone, and coal. This formation crops out along the bluffs of Kickapoo Creek two miles east of the Base, and along the East Branch of LaMarsh Creek, one mile to the west of the Base (see Figure 3.2 for location of these creeks). Limestone and shale were observed in borings taken 0.25 miles west of the Base, and shale and coal are visible along the bluffs of Kickapoo Creek (ES, 1988).

Approximately 30 feet of Wisconsinan-aged loess, named the Peoria Loess, overlie the Carbondale formation. In the vicinity of the former FTA, the loess is tan to light grey silt grading into a silty clay. One soil boring at the former FTA intersected saturated silty sand near the Carbondale-Peoria Loess contact. No groundwater was observed in any of the four boreholes completed by ES (1988). Other soil borings in the area of the former FTA intersected groundwater within ten feet of the Carbondale-Peoria Loess contact (PSI, 1986). Seeps can be observed near the Carbondale-Peoria Loess contact along the bluffs of Kickapoo and LaMarsh Creeks.

Not observed at the Base is the Sankoty Sand, the most extensive glacial aquifer in the region. The sand is older than the Peoria Loess, is at least pre-Kansan in age and its average thickness is 100 feet. Distribution of this unit is controlled by bedrock topography and its occurrences are limited to the ancient Mississippi River Valley. This unit underlies the Kickapoo Creek valley, 1.5 miles east of the Base (Horberg et al, 1950).

### 3.4.2 Structure

The Base is located on the northwest flank of the Illinois basin. The pre-Pennsylvanian formations dip south-southeastward at about 15 feet per mile (less than one degree) while the Pennsylvanian beds overlap progressively older strata in a northwest direction but have the same regional structure at a slightly less dip (Horberg et al, 1950).

No faults or small-scale folds have been reported in the vicinity of the Base.

### 3.4.3 Economic Geology

Fourteen to fifteen coal-bearing cyclothems have been recognized in the Peoria region. Two coal beds within the Carbondale Formation, tentatively identified as the "Danville (No. 7)" and the "Herrin (No. 6)," were logged from cuttings when the water well at the remote Facility 80 was installed (GRW Engineers, 1985). The coal occurs at depths from 66 feet to 69 feet and from 173 feet to 177 feet, respectively. These coal horizons are currently subeconomic because of their high sulfur content and their high overburden thickness.

## 3.5 SOILS

Three soil types are identified in the immediate vicinity of the Base (Figure 3.5); all are derived from the Peoria Loess. The predominate soil type, an Orthent, is mapped in areas that have been extensively modified by cutting and filling during construction activities, consequently the original soil type cannot be identified. Orthents at the Base are moderately fine to moderately coarse in texture, consist predominantly of silt, and are moderately well to somewhat poorly drained. Permeability varies because of the previous construction and compaction activities and original soil texture and composition. Infiltration (vertical hydraulic conductivity) of compacted silt is low to moderate and is estimated to be from $1 \times 10^{-6}$ to $1 \times 10^{-4}$ centimeters per second (cm/sec).

The two naturally occurring soils types identified are the Rozetta silt loam and the Sylvan silt loam (U.S. Soil Conservation Service, 1977). Both of these soils are moderately permeable, susceptible to erosion, and are well drained. These loams contain upwards of 35 percent silt. Infiltration (vertical hydraulic conductivity) of these soils is estimated by the U.S. Soil Conservation Service to be moderate and ranges from $1 \times 10^{-4}$ to $1 \times 10^{-3}$ cm/sec.

Soils found in the tableland areas are the Rozetta silt loam. Thickness of the Rozetta silt loam was observed to range from 1 foot to 3 feet along the base boundary and at the former FTA. The Sylvan silt loam is found along side slopes adjacent to the tableland. This soil is reported to be 1 foot to 3 feet thick in the vicinity of the Base (U.S. Soil Conservation Service, 1977).

## 3.6 HYDROGEOLOGY

Two aquifer systems exist at the Base: an upper unconfined and discontinuous surficial aquifer in the loess occurring above the Peoria Loess-Carbondale Formation contact, and a lower confined aquifer within the consolidated Pennsylvanian-aged and older rocks. It has not been demonstrated that the two aquifers are directly interconnected. Groundwater flow in the vicinity of the Base is not known.

Water-bearing sand and gravel deposits within the Peoria Loess are thin to non-existent. The Illinois Environmental Protection Agency (IEPA) estimates the hydraulic conductivity of a "typical" loess to be on the order of $1 \times 10^{-6}$ to $1 \times 10^{-4}$ cm/sec (Berg et al, 1984). Four boreholes drilled by ES (1987) to depths of 30 feet

at the former FTA did not intersect groundwater; however, one of the boreholes did intersect a two-foot thick zone of wet sand near the Peoria Loess-Carbondale Formation contact at a depth of 27 feet. No standing water was observed in the borehole after 24 hours. Also in the vicinity of the former FTA, PSI (1986) completed 22 borings. The presence of the surficial aquifer was found to be sporadic and may be reflective of either an undulating water table or a perched water table. Of the 22 borings completed by PSI, 11 intersected groundwater at depths ranging from 9.5 feet to 32 feet. There is no evidence that the surficial aquifer and the bedrock aquifers are directly interconnected; however, interconnection may exist via pathways of secondary permeability (e.g. joints, fractures).

Groundwater can be obtained from sandstone, coal, and fractured shale in the Pennsylvanian rocks in wells as deep as 350 feet; however, drilling into the Mississippian Keokuk-Burlington Formation and Devonian-Silurian rocks is not recommended because of the poor quality of the water (see Figure 3.4). The State Water Survey reports the water of the Keokuk-Burlington Formation to be more highly mineralized (8,000 parts per million) than that from any other formation in the area. The Glenwood-St. Peter sandstone (Ordovican-aged) is the deepest aquifer penetrated for groundwater in Peoria County. The Cambrian Galesville sandstone, about 1,000 feet below the St. Peter sandstone, probably contains water too highly mineralized for most purposes (Bergstrom, 1956).

Groundwater occurs at a depth of 238 feet at the remote Facility 80. The groundwater is reported to be mineralized with high concentrations of chloride, and yields only two gallons per minute (GRW Engineers, 1985).

The most important aquifer for municipal and industrial use in Peoria County is the pre-Kansan Sankoty Sand which does not underlie the Base. This aquifer is approximately 1.5 miles east of the Base. This sand forms a thick (50 feet to 150 feet), semi-confined aquifer in portions of the Illinois River and Kickapoo Creek Valleys. Younger glacial outwash deposits, overlying the Sankoty Sand along the Illinois River and Kickapoo Creek Valleys, also are a source of water supply in shallower wells, and are interconnected with the Sankoty Sand; however, the relationship to the surficial aquifer near the Peoria Loess-Carbondale Formation contact is unknown.

## 3.7 WATER USE

The water supply for the Base is provided by the Illinois American Water Company. The source for this water is the Sankoty Sand tapped by wells more than 3 miles east of the Base (Figures 3.6 and 3.7). The majority of the residential population surrounding the Base purchase water from the Illinois American Water Company for domestic use (personal communication, Illinois American Water Company and the IEPA). The ES field team observed at least one well on private property on the southern side of the Greater Peoria Airport (see Figure 3.6). Ownership, date of construction, and the water quality of this well are unknown.

Numerous industrial and municipal supply wells are located within 3 to 5 miles east of the Base. Most of these wells are relatively shallow and withdraw water from either the Sankoty Sand or alluvium within the Illinois River Valley at a depth of 60 feet to 90 feet below the land surface (Marino and Schicut, 1969) from either the Bartonville or Central Well Field (Figures 3.6 and 3.7). Both aquifers are tapped by many of Peoria's municipal and industrial supply wells and are overlain by recent alluvium. The relationship between the municipal wells and the surficial aquifer at the Base is unknown.

## 3.8 WATER QUALITY

The Illinois Water Quality Board does not monitor the surface water (storm runoff) discharging from the airport area (Raman K. Raman, Illinois State Water Survey, Peoria, oral communication, 1989). The USGS (Moody, et al, 1988) reports that the water quality in the Peoria area is of naturally low quality. Additionally, the USGS reports that three unidentified wells along the Illinois River yield water contaminated by unknown sources (type of contamination not reported).

The nearest surface water bodies at the Base, as defined by the HARM system, are the drainage ditches located on and immediately surrounding the Base. These drainage ditches ultimately discharge into the Illinois River, which is used for recreation and for propagation of fish and wildlife.

The nearest surface water supply is obtained from the Illinois River, located more than three miles downstream of the Base. No population is served by a surface water supply within three miles of the Base.

## 3.9 BIOTIC ENVIRONMENT

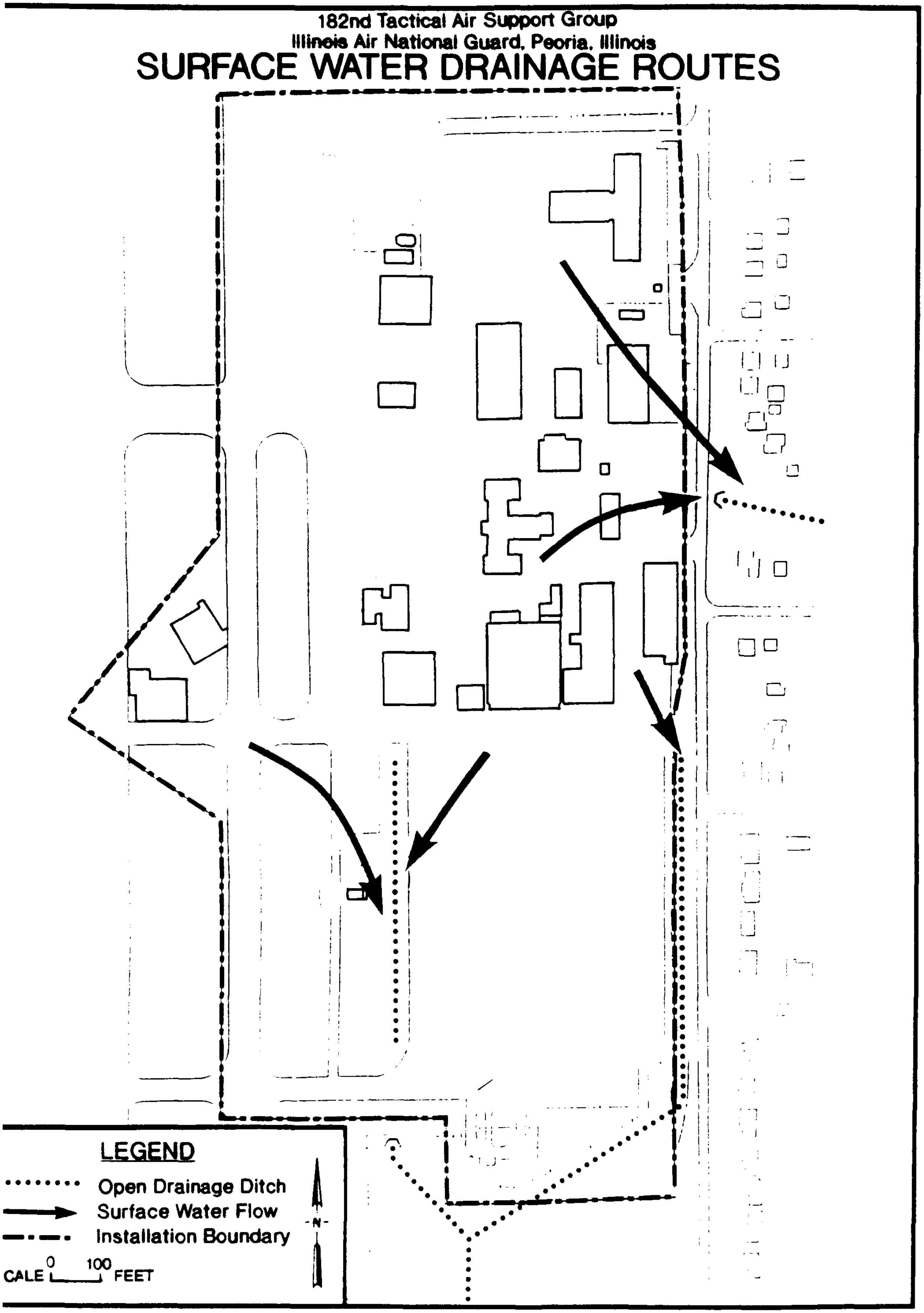
The Base has limited habitat available for wildlife. The Base consists mainly of cultivated lawns, building sites, and paved areas which offer minimal shelter for animals. Small tracts of unmowed brush and grass may provide forage and cover for small mammals and birds. There are no threatened or endangered plant or animal species inhabiting the installation property (GRW Engineers, 1985) and there are no critical environments within one mile of the Base.

## 3.10 SUMMARY OF ENVIRONMENTAL SETTING

The environmental setting data reviewed for this investigation identified the following major points that are relevant to the Base:

- Net precipitation is two inches. The one year, 24-hour rainfall event is 2.75 inches.
- Erosion of the soils ranges from very susceptible to severe.
- The vertical hydraulic conductivity of the compacted soils and the underlying loess on the Base ranges from $1x10^{-4}$ to $1x10^{-5}$ cm/sec, which does not allow for rapid infiltration of water. The vertical hydraulic conductivity of soils surrounding the Base ($1x10^{-4}$ to $1x10^{-3}$ cm/sec) will allow for a moderate infiltration rate of water.
- Two aquifer systems exist at the installation: an upper unconfined, discontinuous loess aquifer that occurs within 10 feet of the Peoria Loess-Carbondale contact; and a lower confined aquifer that occurs within the consolidated Pennsylvanian-aged and older rocks at depths less than 250 feet below the land surface. It has not been demonstrated that the two aquifers are directly interconnected.
- No municipal wells are located within three miles of the installation. Industrial and municipal wells in the Peoria region withdraw water from the unconsolidated sediments within the Illinois River Valley or the Sankoty Sand, which are interconnected. The majority of the residential population surrounding the Base is provided with municipal water. One private well was identified along the southern boundary of the Greater Peoria Airport. No information is available on this well.
- The Base is not within a 100-year floodplain.
- No threatened or endangered plant or animal species inhabit the Base.
- Groundwater conditions at the Base are unknown.

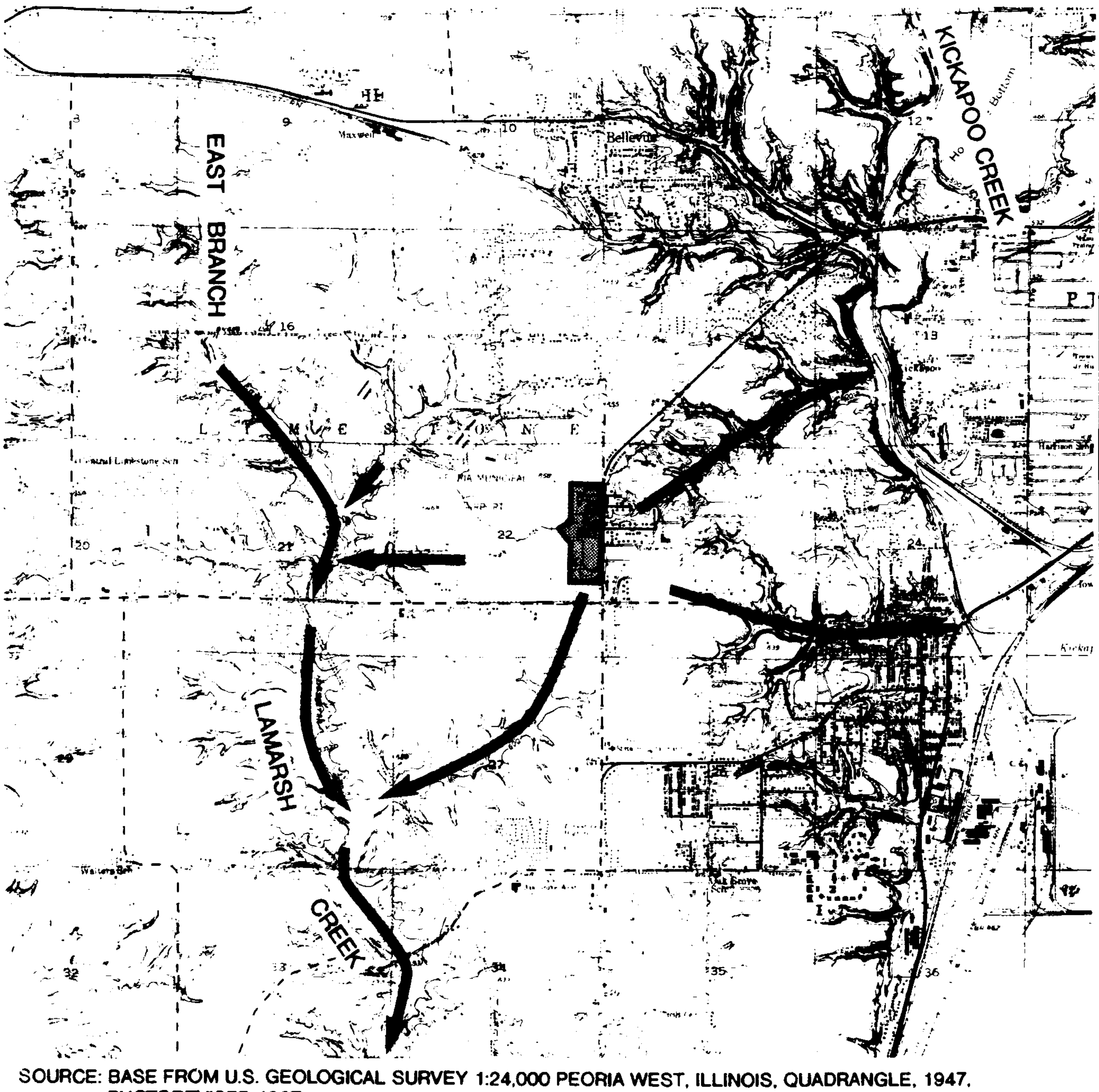
FIGURE 3.1




ES ENGINEERING-SCIENCE

182nd Tactical Air Support Group
Illinois Air National Guard, Peoria, Illinois

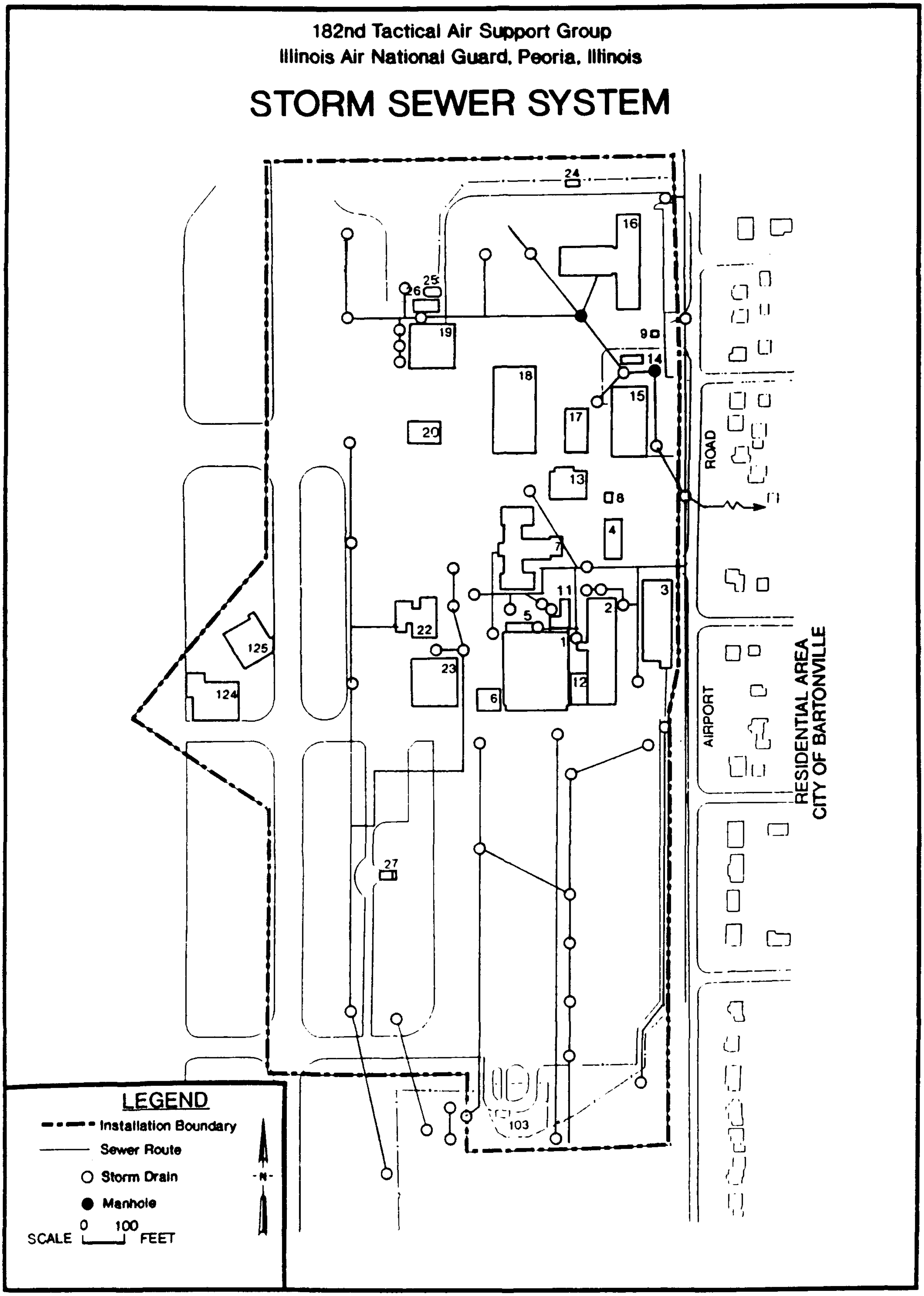
# REGIONAL DRAINAGE MAP




SOURCE: BASE FROM U.S. GEOLOGICAL SURVEY 1:24,000 PEORIA WEST, ILLINOIS, QUADRANGLE, 1947, PHOTOREVISED 1967

Surface Water Flow

N


182nd Tactical Air Support Group
Illinois Air National Guard, Peoria, Illinois
STORM SEWER SYSTEM
LEGEND
Installation Boundary
Sewer Route
Storm Drain
Manhole
SCALE 0 100 FEET
N
AIRPORT ROAD
RESIDENTIAL AREA
CITY OF BARTONVILLE
1
2
3
4
5
6
7
8
9
11
12
13
14
15
16
17
18
19
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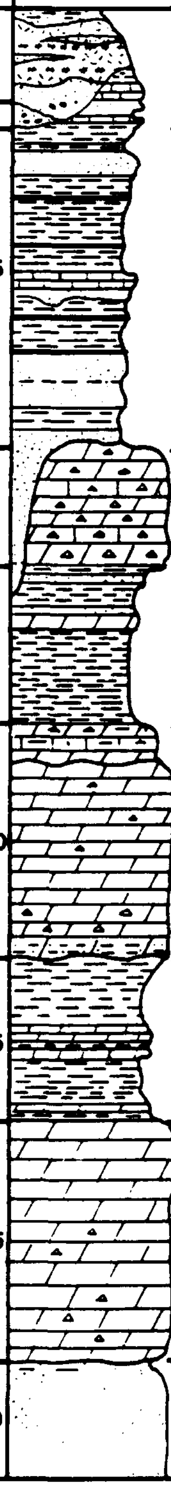
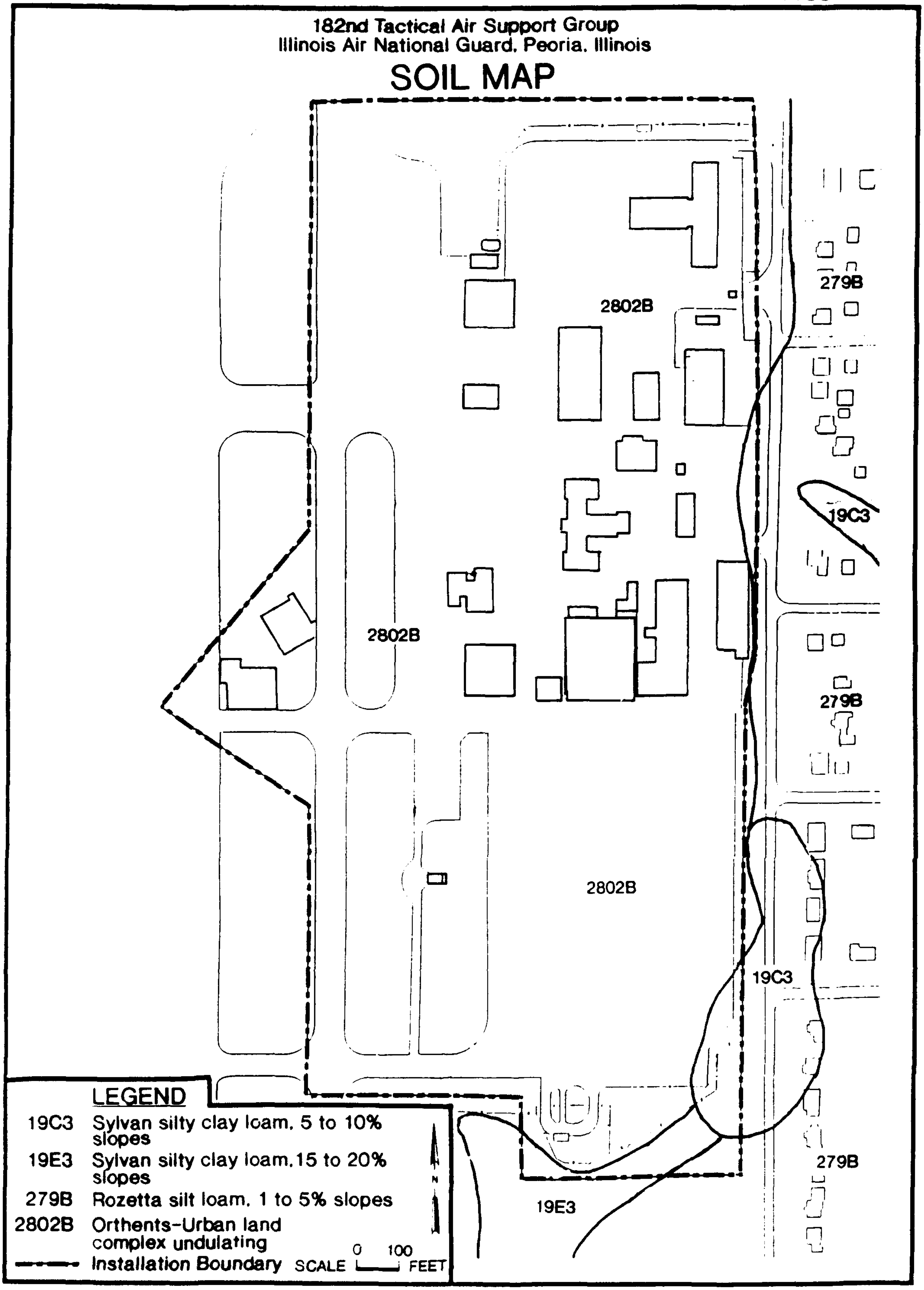
22
23
24
25
26
27
103
124
125

182nd Tactical Air Support Group
Illinois Air National Guard, Peoria, Illinois

# GENERALIZED GEOLOGIC COLUMN OF BEDROCK FORMATIONS ABOVE THE LOWER ORDOVICIAN IN THE PEORIA REGION

| ERA | SYSTEM | SERIES, GROUP OR FORMATION | FEET MIN MAX | GRAPHIC COLUMN | COMPOSITION | GROUNDWATER POSSIBILITIES |
|---|---|---|---|---|---|---|
| CENOZOIC | QUATERNARY | Pleistocene | 0-500 |  | ALLUVIUM TILL, SAND, GRAVEL, SOILS | THE ONLY LARGE SOURCE OF SATISFACTORY GROUNDWATER. SUPPLIES VARY WIDELY DEPENDING ON LOCAL CONDITIONS. |
| | TERTIARY? | | 0-10 | | CHERT, GRAVEL | UNIMPORTANT |
| PALEOZOIC | PENNSYLVANIAN | McLeansboro | 150-525 | | SHALE, SANDSTONE, LIMESTONE, COAL | SMALL SUPPLIES OBTAINABLE FROM THIN LIMESTONES AND SANDSTONE AT DEPTHS OF LESS THAN 300 FEET. UTILIZED IN AREAS WHERE BEDROCK IS HIGH AND GLACIAL DEPOSITS ARE THIN, MAY OR MAY NOT BE HIGHLY MINERALIZED. |
| | | Carbondale | | | | |
| | | Tradewater | | | | UNIMPORTANT |
| | MISSISSIPPIAN | Keokuk-Burlington | 0-210 | | DOLOMITE, VERY CHERTY, FOSSILIFEROUS, WHITE TO BROWN, SOME LIMESTONE | UNSATISFACTORY QUALITY BECAUSE OF HIGH CHLORIDE CONTENT OCCURS IN SOLUTION OPENINGS AND IN FRACTURED CHERTY BEDS. WELLS FORMERLY FLOWED. |
| | DEVONIAN-MISSISSIPPIAN | Kinderhook-New Albany | 70-250 | | SHALE, GREEN TO BROWN, PYRITIC, SPORANGITES, SOME SANDSTONE AND DOLOMITE | UNIMPORTANT |
| | DEVONIAN | Cedar Valley Wapsipinicon | 225-550 | | LIMESTONE AND DOLOMITE, SILTY, CHERTY, FINE, GRAY TO BUFF, PYRITIC IN PART | UNSATISFACTORY QUALITY BECAUSE OF HIGH CHLORIDE AND HIGH HYDROGEN SULPHIDE CONTENT. ABUNDANT SUPPLIES FROM SOLUTION OPENINGS. WELLS FLOWING OR FORMERLY FLOWED. |
| | SILURIAN | Niagaran | | | DOLOMITE, CRYSTALLINE, VESICULAR, WHITE TO GRAY, PARTLY CHERTY | |
| | | Alexandrian | | | DOLOMITE, DENSE TO VESICULAR, SILTY AND SANDY IN LOWER PART | |
| | ORDOVICIAN | Maquoketa | 150-235 | | SHALE, DOLOMITE, GREEN TO GRAY, SOME DOLOMITE | UNIMPORTANT |
| | | Galena-Platteville | 280-305 | | DOLOMITE, CRYSTALLINE, BUFF, PARTLY VESICULAR | UNSATIFACTORY QUALITY. MINERAL CONTENT SIMILAR TO ST. PETER WATERS ABUNDANT SUPPLIES FROM SOLUTION OPENINGS. WELLS FLOWING OR FORMERLY FLOWED. |
| | | Glenwood-St. Peter | 150-250 | | SANDSTONE, MEDIUM-GRAINED, FRIABLE, WHITE | UNSATISFACTORY BECAUSE OF HIGH CHLORIDE AND HYDROGEN SULPHIDE, ALTHOUGH TOTAL MINERALS ARE LESS THAN IN HIGHER SILURIAN AND KEOKUK-BURLINGTON AQUIFERS. ABUNDANT SUPPLIES. |

SOURCE: Horberg et al. 1950.


182nd Tactical Air Support Group
Illinois Air National Guard, Peoria, Illinois
SOIL MAP
2802B
279B
19C3
2802B
279B
2802B
19C3
279B
19E3
LEGEND
19C3 Sylvan silty clay loam, 5 to 10% slopes
19E3 Sylvan silty clay loam, 15 to 20% slopes
279B Rozetta silt loam, 1 to 5% slopes
2802B Orthents-Urban land complex undulating
Installation Boundary
N
SCALE 0 100 FEET

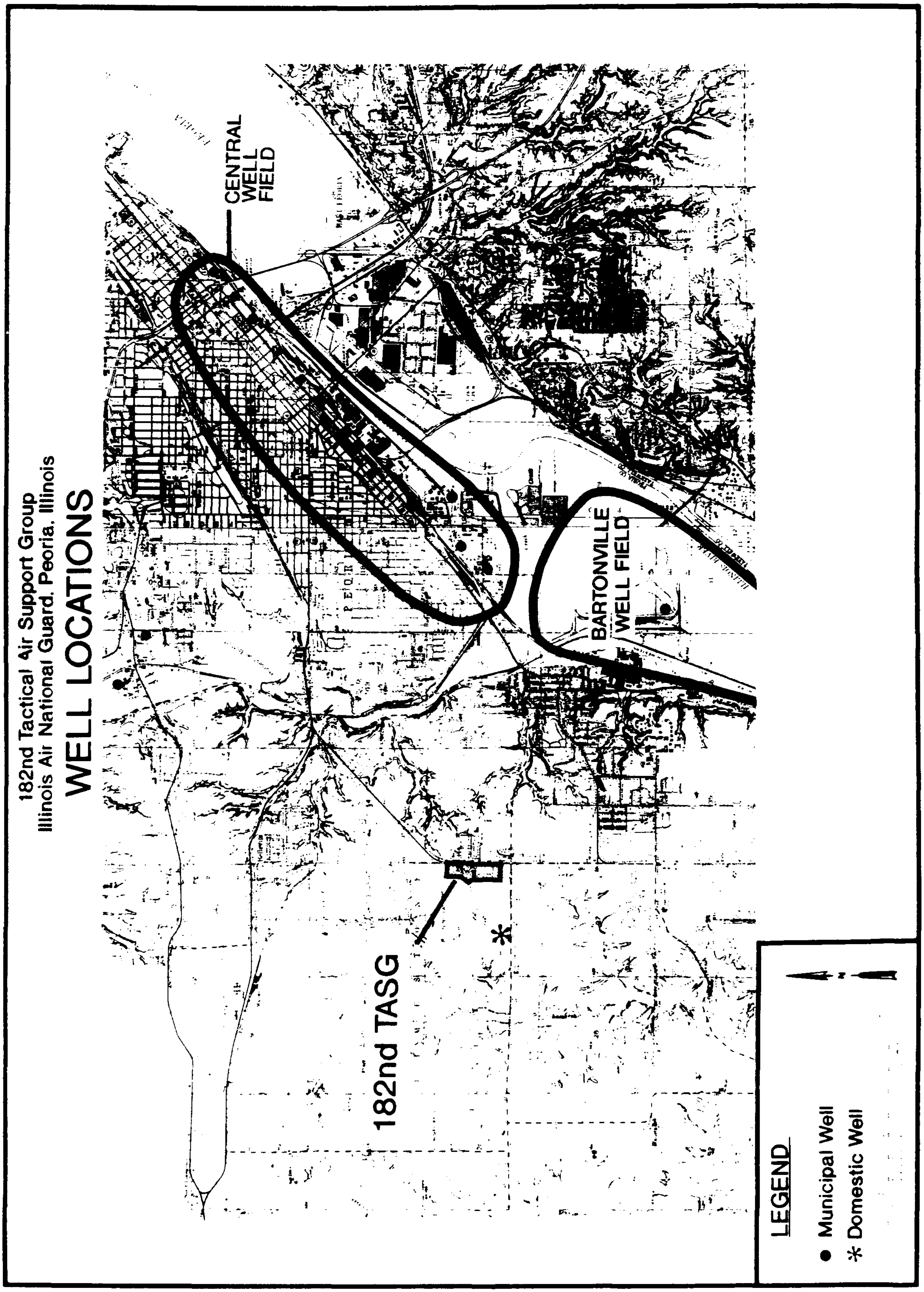
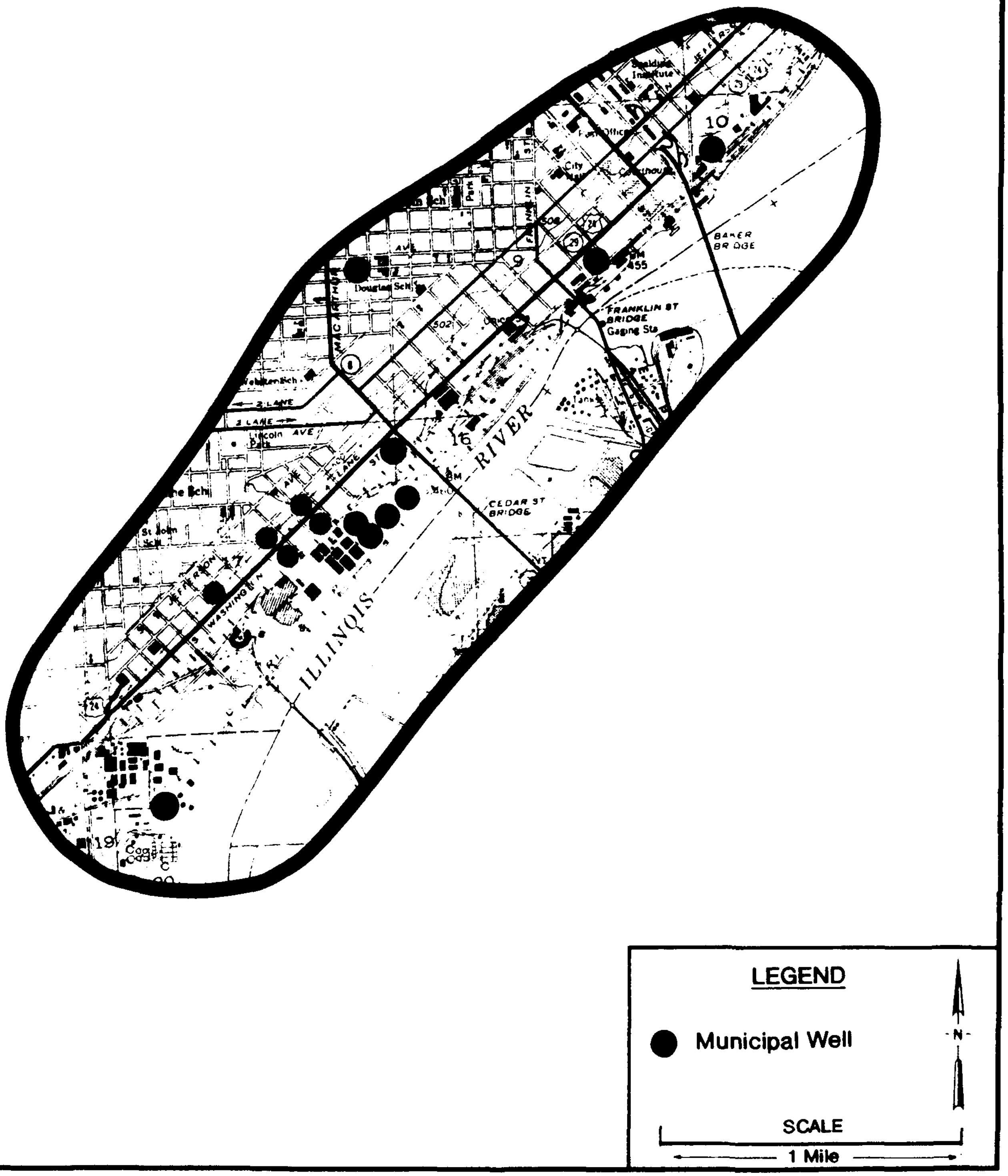

182nd Tactical Air Support Group
Illinois Air National Guard, Peoria, Illinois
WELL LOCATIONS
CENTRAL WELL FIELD
BARTONVILLE WELL FIELD
182nd TASG
LEGEND
● Municipal Well
* Domestic Well

Figure 3.7

182nd Tactical Air Support Group
Illinois Air National Guard, Peoria, Illinois

# WELL LOCATIONS WITHIN THE CENTRAL WELL FIELD



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## SECTION 4
## SITE EVALUATION

# SECTION 4
# SITE EVALUATION

## 4.1 ACTIVITY REVIEW

The review of the Base records and files plus interviews with present and former base personnel identified specific operations in which the majority of hazardous materials or hazardous wastes are/were used, stored, processed, and disposed. ES found that some base records and files were incomplete making it difficult to ascertain actual waste generating and handling activities (e.g. specific dates of chemical usages, types and quantities used, quantities of associated wastes generated, and waste disposal methods).

The releases of hazardous wastes at the Base are associated with the following sources or activities:

- Industrial Operations
- Fire Protection Training
- Pesticide and Herbicide Utilization
- Spills and Leaks
- PCB Use and Disposal
- Abandoned Underground Storage Tanks

The following discussion addresses only those wastes generated on the installation which are either hazardous or potentially hazardous. Hazardous wastes are those wastes referenced by CERCLA. A potentially hazardous waste is one which is suspected of being hazardous although insufficient data are available to fully characterize the waste material.

### 4.1.1 Industrial Operations (Shops)

Since the Base opened in 1947, the main function of the industrial operations (shops) on the installation has been to provide maintenance support activities to aircraft flying missions. Activities have included aircraft equipment maintenance, vehicle maintenance, ground equipment maintenance, and installation facilities maintenance. Base files were reviewed to determine those shops that handle hazardous materials or generate hazardous waste.

For the shops believed to generate hazardous wastes, interviews with shop personnel along with a records search was conducted. The information obtained from interviews and installation records has been summarized in Table 4.1. For

each generator of a hazardous waste, Table 4.1 presents shop operation, waste materials generated, quantities generated, and a disposal method timeline. Values are reported on a best-estimate basis. Shops that have generated insignificant quantities or no hazardous waste are omitted. Combustibles identified in Table 4.1 which have Methods(s) of Treatment, Storage, and Disposal reported as "unknown" are believed to have been burned during exercises in the former Firefighting Training Area (FTA) at the Base.

In the early years of installation operations (1947 to 1952), methods for disposal of wastes were not documented. From approximately 1953 to 1987, the majority of the combustible wastes were burned at the former FTA or were removed off-base. An off-base contractor was used for removal of waste oils. The Defense Reutilization and Marketing Office (DRMO), formerly the Defense Property Disposal Office, Chanute Air Force Base (AFB), Illinois, was used for removal of hazardous material. Presently, hazardous wastes are drummed and stored for shipment through the DRMO at Chanute AFB. Waste oils are disposed off-base utilizing a local contractor.

Some solid waste generated by shop operations was reportedly disposed in a landfill on Greater Peoria Airport Authority land through 1952, when landfilling operations ceased and the civilian terminal was built. Since 1952, solid waste has been removed from the installation by a contracted disposal company.

### 4.1.2 Fire Protection Training

From 1953 to early 1987, the Base Fire Department conducted fire protection training exercises at one location, the former FTA (see Figure 2.2). Prior to 1953, it is uncertain what, if any, fire protection training was done.

The former FTA, located in an area southwest of the existing Base, was an earth berm and natural soil bottom burn pit. AVGAS, MOGAS, waste oils, and other combustible liquids were burned here.

Prior to this PA, an Immediate Response Investigation was conducted at the former FTA (ES, 1988). This action was required because of new base construction activities. Contaminants were detected in the upper four feet of soil and remedial activities were conducted. A Final Closure Report was submitted to the IEPA and was accepted in February of 1989; therefore, the former FTA was not considered within the scope of this PA.

### 4.1.3 Pesticide and Herbicide Utilization

Application of pesticides and herbicides has been monitored by Base Civil Engineering throughout the history of the installation. Currently, all pesticides and herbicides are handled and applied by an outside contractor and none are stored on-base.

## 4.2 DISPOSAL/SPILL SITE IDENTIFICATION, EVALUATION, AND HAZARD ASSESSMENT

The PA identified three sites of potential contamination (Figure 4.1). These sites were evaluated using the Decision Tree Methodology shown in Figure 1.1 and have been scored using the Hazard Assessment Rating Methodology (HARM). The HARM ranking procedure is discussed in Appendix D and the detailed rating form for each site is presented in Appendix E. The HARM system is designed to indicate the relative need for follow-on action.

### 4.2.1 Site 1 - Septic System Filter Beds (HARM Score = 54)

Site 1 is the former septic system filter beds located south of Facility 3, approximately 75 feet west of the eastern base boundary. This site has been covered with pavement and is shown in Figure 4.2. A storm drain and two USTs, Tanks 3-1 and 3-2, are located in this vicinity. Tank 3-1 is active while Tank 3-2 has been abandoned.

It was reported that an unknown quantity of spent solvents and associated wastes from industrial operations were poured into these open filter beds. Also, a sanitary sewer system drawing dated 18 March 1958 indicates that the septic system served the Base Motor Pool, a potential source of contamination. Aerial photographs of the Base indicate that this disposal practice would have occurred sometime between 1951 and 1963. Aerial photographs of the Base taken in 1951 do not indicate the presence of the open filter beds south of Facility 3. Aerial photographs taken in 1957 indicate the presence of an open structure in this area which 1963 photographs do not reveal. The Base was tied into the Greater Peoria Sanitary District in April of 1966 (Greater Peoria Sanitary Sewer District, oral communication). The filter beds were reportedly eight feet deep and measured approximately 30 feet by 40 feet in total area.

Site 1 has been HARM-scored because of the possibility that hazardous wastes were disposed into the septic system filter beds. Such activities may have

resulted in groundwater contamination close to the installation boundary. The HARM score for this site was 54, with the receptors subscore equal to 25, waste characteristics subscore equal to 80, pathways subscore equal to 56, and final waste management factor equal to 1.0.

### 4.2.2 Site 2 - Grass Area Along the Base Boundary East of Aircraft Apron (HARM Score = 54)

Site 2 (Figure 4.3) is located less than 50 feet south and west of Site 1 along the Base fence line. This site is covered with grass, receives surface water runoff from the aircraft apron and is immediately adjacent to a south draining ditch (Figure 3.1). Trichloroethene (TCE), PS-661, and PD-680 wastes were reportedly poured onto the ground for weed control along the fence. TCE, PS-661, and PD-680 were used as solvents in munitions operations to clean aircraft guns. Prior to the late 1960's, solvent was contained in a split 55-gallon drum and guns would be cleaned within the drum. This drum, constructed with wheels and a spigot for a drain, was rolled out and the spent solvent drained onto the ground. The same drum was used on Site 3 (discussed below) for the same purpose. When the snow made it difficult to roll the drum, the spent solvent would be removed with a bucket and poured onto the ground. It is not known when this practice commenced and it is assumed to have been ongoing since the base opened.

TCE and PS-661 were used in munition operations until the late 1960's when there was the switch to PD-680. TCE was reportedly used straight and sometimes mixed with PS-661. An estimated 75 gallons per year of total solvent was reportedly used for cleaning in munitions operations. Waste solvent generated during these operations was poured onto the ground until the mid 1970's. The majority of the 75 gallons of waste solvent generated was poured onto the grass area at Site 2; however actual quantities dumped are unknown. Smaller amounts of these wastes were disposed of in a similar manner at Site 3, discussed below. It should be noted that for a short period of time in the early 1970's, munition operations ceased and no waste was generated.

As part of this PA, five soil samples were obtained at a depth of 2.5 feet below the land surface along the fence (see Figure 4.3) and submitted for volatile analysis (U.S. EPA Method SW8240). The target compound trichloroethene was not detected in any of the samples. Only one organic compound, 2-hexanone (butyl methyl ketone), a possible laboratory contaminant, was detected at two sample

points with concentrations in both samples of 68 micrograms per kilogram ($\mu$g/kg). The analytical results for soil samples (ILANG-PA2 through PA6) are presented in Appendix F. In summary, no surficial site-related contamination was observed at Site 2.

Site 2 has been HARM scored because trichloroethene has been disposed of along the installation boundary. The HARM score for this site was 54 with the receptors subscore equal to 25, waste characteristics subscore equal to 80, pathways subscore equal to 56 with a final waste management factor to 1.0.

### 4.2.3 Site 3 - Grass Area West of Aircraft Apron and East of Fuel Truck Parking Area (HARM Score = 54)

Site 3 (Figure 4.3) is located immediately east of the drainage swale (Figure 3.1) between the aircraft apron and the fuel truck parking area. This site is covered with grass and receives surface water runoff from the aircraft apron.

TCE, PS-661, and PD-680 wastes were reportedly poured onto the ground on the grass area west of the apron for weed control adjacent to the aircraft apron. TCE, PS-661, and PD-680 were used as solvents in munitions operations to clean aircraft guns. Prior to the late 1960's, solvent was contained in a split 55-gallon drum and guns would be cleaned within the drum. This drum, constructed with wheels and a spigot for a drain, would be rolled out and the spent solvent drained onto the ground. When the snow made it difficult to roll the drum, the spent solvent would be removed with a bucket and poured onto the ground. The same drum was used on Site 2 (Section 4.2.2) for the same purpose. It cannot be documented when this practice commenced and it is assumed to have been ongoing since the base opened.

TCE and PS-661 were used in munition operations until the late 1960's when there was the switch to PD-680. TCE was reportedly used straight and sometimes mixed with PS-661. Total volume of waste solvent poured onto the grass at Site 3 is unknown but is less than 3.5 gallons. The majority of the waste solvent was reportedly poured onto the grass area along the fence line east of the apron (Site 2); however, actual quantities dumped are unknown. For a short period of time in the early 1970's, munition operations were ceased and no waste solvents were generated.

Four soil samples were obtained at a depth of 1.5 feet to 2 feet below the land surface in a drainage swale adjacent to the operational apron (see Figure 4.3,

Site 3). While taking sample PA 10, surficial runoff water within the drainage ditch was encountered. The sample itself however, was not saturated. The samples were submitted for volatile analysis (U.S. EPA Method SW8240), however the target compound trichloroethene was not detected in any of the samples. Dichloromethane (DCM) was detected in all four samples at concentrations of less than 20 $\mu$g/kg. DCM is a common laboratory solvent and is suspected of being a laboratory artifact in these samples. The analytical results for soil samples (ILANG-PA7 through PA10) are presented in Appendix F. In summary, no surficial contamination was observed at Site 3.

Site 3 has been HARM-scored because trichloroethene has been disposed of in the area west of the flight apron and east of the fuel truck parking area. The HARM score for this site was 54, with the receptors subscore equal to 25, waste characteristics subscore equal to 80, pathways subscore equal to 56, and final waste management factor of 1.0.

## 4.3 OTHER PERTINENT FACTS

### 4.3.1 PCB Use and Disposal

The U.S. EPA conducted a polychlorinated biphenyl (PCB) compliance inspection of the Base as recently as 06 May 1987. Based upon the information collected during this inspection, the U.S. EPA determined that there were no violations of the Federal PCB regulations (40 CFR Part 761).

All oil-filled transformers on the Base are owned by the Central Illinois Light Company and none contain PCBs. In addition, the Base does not have any PCB items in storage for disposal nor has it disposed of any PCB items.

### 4.3.2 Abandoned Underground Storage Tanks

A total of eight abandoned underground storage tanks (USTs) have been identified at the Base. Seven are believed to be located in the immediate area north of Facility 20, and one immediately south of Facility 3. Locations of the USTs are shown on Figure 4.4.

The seven tanks identified north of Facility 20 previously belonged to the fixed base operator, Byerly Aviation, when this portion of the Base was used as the operations area for the Greater Peoria Airport. A drawing dated 01 November 1956 shows the presence of five tanks, a pump house (no longer in existence) and

two proposed tanks. The tanks are covered with approximately two feet of crushed stone and there is no above-ground evidence of the tanks. In interviews with base personnel, up to eight tanks were reported buried in the vicinity north of Facility 20. This reported eighth tank may be the UST immediately south of Facility 19, which is in close proximity to Facility 20. This tank is active, presently containing diesel fuel.

All active and known abandoned USTs are indicated on Figure 4.4. Appendix C is a UST technical data summary.

### 4.3.3 Oil Water Separators

The base does not discharge any wastes, other than storm water runoff, into local streams. Three oil water separators, each with an approximate 500 gallon waste oil holding tank, are utilized on the Base (Figure 4.4). Wastewater from these separators discharge directly into the sanitary sewer system. The oil holding tanks are reportedly emptied once per year. The Base does not have a current NPDES permit; however the Base did have a permit for oil water separator Number 2 (Figure 4.4, O/W-2) located on the apron. This permit was terminated in 1983 after the wastewater from O/W-2 was redirected into the sanitary sewer system. No other data is available in the Base files.

TABLE 4.1

182nd Tactical Air Support Group
Illinois Air National Guard, Peoria, Illinois

# INDUSTRIAL OPERATIONS WASTE MANAGEMENT

| SHOP | HAZARDOUS MATERIALS/ HAZARDOUS WASTE | QUANTITIES DISPOSED GAL/YR (YR)** | METHOD(S) OF TREATMENT, STORAGE, & DISPOSAL (ESTIMATED TIME FRAME) |
|---|---|---|---|
| Aircraft Maintenance | PD-680 | 400 (1987)<br>200 (1988) | NU → UNKNOWN → DRMO → |
| | Hydraulic Oil | 300 (1987)<br>150 (1988) | UNKNOWN → CONTR → |
| | Engine Oil | 100 (1987)<br>50 (1988) | UNKNOWN → CONTR → |
| Life Support Shop | Mercury Batteries | Unknown | NU → DRMO → |
| Automotive Maintenance and Motor Pool | Engine Oil | 500 | NU → FTA → CONTR → |
| | PD-680 | 50 | NU → FTA → CONTR → |
| | Sulfuric Acid | 50 | NU → NEUTR SAN → |
| | JP-4 | 100 | NU → FTA → CONTR → |
| | Ethylene Glycol | 50 | NU → SAN → OWS → |
| | Lubricating Oil | included w/ Engine Oil | NU → FTA → CONTR → |
| | Hydraulic Oil | 50 | NU → FTA → CONTR → |
| | Transmission Fluid | 10 | NU → FTA → CONTR → |
| | Motor Oil | included w/ Engine Oil | NU → FTA → CONTR → |
| | Paint Thinner | 25 | NU → FTA → CONTR → |
| | Brake Fluid | 10 | NU → FTA → CONTR → |
| | Diesel Fuel | 50 | NU → FTA → DRMO → |
| | Grease (Bearing) | 50 lbs | NU → LNDFL → OWS → |

two proposed tanks. The tanks are covered with approximately two feet of crushed stone and there is no above-ground evidence of the tanks. In interviews with base personnel, up to eight tanks were reported buried in the vicinity north of Facility 20. This reported eighth tank may be the UST immediately south of Facility 19, which is in close proximity to Facility 20. This tank is active, presently containing diesel fuel.

1/27/90

~~During the mid-1980s, AVGAS reportedly surfaced from one of the seven USTs in a low area near the pump house, flowed onto the ramp, and entered a storm sewer. This spill occurred during the early summer after a rainstorm of unknown intensity. Water had apparently entered the tank causing the AVGAS to float to the surface and discharge. The contents of this tank, which were found to easily ignite, were reportedly pumped out and transferred into one of the other USTs. The exact locations and identifications of the leaking tank and the tank that received its contents are not known. It is believed however, that one of the tanks closest to the pump house had leaked and its volume may have been either 3,000 or 4,000 gallons. Also not known is the quantity of AVGAS spilled or transferred.~~

~~There are two USTs in the area immediately south of Facility 3; one has been abandoned and the other is still in use. The capacities of these tanks are 2,000 gallons and 4,000 gallons, respectively. Use of the 2,000 gallon tank to supply heating oil to the steam boiler in Facility 3 was discontinued around 1979 for use of the larger 4,000 gallon tank. It was reported that the UST closest to Facility 3, the abandoned tank, may have once been leaking.~~

All active and known abandoned USTs are indicated on Figure 4.4. Appendix C is a UST technical data summary.

### 4.3.3 Oil Water Separators

The base does not discharge any wastes, other than storm water runoff, into local streams. Three oil water separators, each with an approximate 500 gallon waste oil holding tank, are utilized on the Base (Figure 4.4). Wastewater from these separators discharge directly into the sanitary sewer system. The oil holding tanks are reportedly emptied once per year. The Base does not have a current NPDES permit; however the Base did have a permit for oil water separator Number 2 (Figure 4.4, O/W-2) located on the apron. This permit was terminated in 1983 after the wastewater from O/W-2 was redirected into the sanitary sewer system. No other data is available in the Base files.

TABLE 4.1

182nd Tactical Air Support Group
Illinois Air National Guard, Peoria, Illinois

# INDUSTRIAL OPERATIONS WASTE MANAGEMENT

| SHOP | HAZARDOUS MATERIALS/ HAZARDOUS WASTE | QUANTITIES DISPOSED GAL/YR (YR)** | METHOD(S) OF TREATMENT, STORAGE, & DISPOSAL (ESTIMATED TIME FRAME) 1947* 1950 1960 1970 1980 1990 |
|---|---|---|---|
| Aircraft Maintenance | PD-680 | 400 (1987)<br>200 (1988) | NU — UNKNOWN — DRMO |
| | Hydraulic Oil | 300 (1987)<br>150 (1988) | UNKNOWN — CONTR |
| | Engine Oil | 100 (1987)<br>50 (1988) | UNKNOWN — CONTR |
| Life Support Shop | Mercury Bctteries | Unknown | NU — DRMO |
| Automotive Maintenance and Motor Pool | Engine Oil | 500 | NU — FTA — CONTR |
| | PD-680 | 50 | NU — FTA — CONTR |
| | Sulfuric Acid | 50 | NU — NEUTR SAN |
| | JP-4 | 100 | NU — FTA — CONTR |
| | Ethylene Glycol | 50 | NU — SAN — OWS |
| | Lubricating Oil | included w/ Engine Oil | NU — FTA — CONTR |
| | Hydraulic Oil | 50 | NU — FTA — CONTR |
| | Transmission Fluid | 10 | NU — FTA — CONTR |
| | Motor Oil | included w/ Engine Oil | NU — FTA — CONTR |
| | Paint Thinner | 25 | NU — FTA — CONTR |
| | Brake Fluid | 10 | NU — FTA — CONTR |
| | Diesel Fuel | 50 | NU — FTA — DRMO |
| | Grease (Bearing) | 50 lbs | NU — LNDFL — OWS |

TABLE 4.1 (Continued)

182nd Tactical Air Support Group
Illinois Air National Guard, Peoria, Illinois

# INDUSTRIAL OPERATIONS WASTE MANAGEMENT

| SHOP | HAZARDOUS MATERIALS/ HAZARDOUS WASTE | QUANTITIES DISPOSED GAL/YR (YR)** | METHOD(S) OF TREATMENT, STORAGE, & DISPOSAL (ESTIMATED TIME FRAME) 1947* 1950 1960 1970 1980 1990 |
|---|---|---|---|
| Corrosion Control and Paint Shop | Thinners (Aliphate Polyurethane) | 2 (1987)<br>1 (1988) | UNKNOWN — DRMO |
| | Paint Strippers | 24 (1987)<br>10 (1988) | UNKNOWN — DRMO |
| | Acids | 5 lbs (1987)<br>2 lbs (1988) | UNKNOWN — NEUTR SAN |
| | Thinners (Acrylic Lacquer) | 60 (1987)<br>25 (1988) | UNKNOWN — DRMO |
| | Thinners (Synthetic Enamel) | 5 (1987)<br>2 (1988) | UNKNOWN — DRMO |
| | Cleaner (Jet Engine) | 250 (1987)<br>120 (1988) | UNKNOWN — DRMO |
| Paint Shop | Strippers (MEK) | 60 (1987)<br>25 (1988) | UNKNOWN — DRMO |
| | Strippers (MBT) | 55 (1987)<br>25 (1988) | UNKNOWN — DRMO |
| Machine Shop | Metal Cutting Oils – Water Soluble | 30 (1987) | NU — NEUTR SAN |
| | Lubricating Oils – Water Soluble | 5 (1987) | NU — NEUTR SAN |

TABLE 4.1 (Continued)

182nd Tactical Air Support Group
Illinois Air National Guard, Peoria, Illinois

# INDUSTRIAL OPERATIONS WASTE MANAGEMENT

| SHOP | HAZARDOUS MATERIALS/ HAZARDOUS WASTE | QUANTITIES DISPOSED GAL/YR (YR)** | METHOD(S) OF TREATMENT, STORAGE, & DISPOSAL (ESTIMATED TIME FRAME) 1947* 1950 1960 1970 1980 1990 |
|---|---|---|---|
| Aerospace Ground Equipment Maintenance (AGE) | Engine Oil | 220 (1987)<br>110 (1988) | UNKNOWN → CONTR |
| | Hydraulic Oil | 75 (1987)<br>35 (1988) | UNKNOWN → CONTR |
| POL & Operations Storage | JP-4 | 500 | NU → FTA → HEAT PLNT |
| | AVGAS | 100 | NU → FTA → DISC |
| | Tank Cleaning Sludge | 500 | NU → UNKNOWN → FTA → CONTR |
| Non-Destructive Inspection (NDI) | Penetrant | 5 (1987)<br>2.5 (1988) | NU → SAN |
| | Emulsifier | 5 (1987)<br>2.5 (1988) | NU → SAN |
| | Developer | 1 lb (1987)<br>1 lb (1988) | NU → SAN |
| Weapons Release Shop and Munitions Maintenance & Storage Facility | Trichloroethene & PS-661 | 60 | GRND → DISC |
| | PD-680 | 60 | NU → GRND → UNKNOWN → DRMO |

TABLE 4.1 (Continued)

182nd Tactical Air Support Group
Illinois Air National Guard, Peoria, Illinois

# INDUSTRIAL OPERATIONS WASTE MANAGEMENT

| SHOP | HAZARDOUS MATERIALS/ HAZARDOUS WASTE | QUANTITIES DISPOSED GAL/YR (YR)** | METHOD(S) OF TREATMENT, STORAGE, & DISPOSAL (ESTIMATED TIME FRAME) 1947▼ 1950 1960 1970 1980 1990 |
|---|---|---|---|
| Battery Shop | Battery Acid | Unknown | NU → NEUTR SAN |
| Propulsion Shop | PD-680 | 100 (1987)<br>60 (1988) | UNKNOWN → DRMO |
| | Carbon Cleaner (PC-111) | 110 (1987)<br>50 (1988) | UNKNOWN → DRMO |
| | 7808 Oil | 50 (1987)<br>25 (1988) | UNKNOWN → DRMO |

<u>KEY</u>

CONTR – Disposed through Hazardous Waste Contractor
DISC – Discontinued use of source material
DRMO – Disposed through the Defense Reutilization and Marketing Office, Chanute AFB, IL
FTA – Burned at Firefighting Training Area
GRND – Disposed on ground
HEAT PLNT – Burned in Facility 18 heating plant
LNDFL – Landfilled offsite
NEUTR SAN – Neutralized and disposed through sanitary sewer
NU – Source material not used or shop not yet in existence
OWS – Oil/Water Separator
SAN – Disposed in drains leading to sanitary sewer
** – Known quantities only for that year
▼ – 1947, Base became operational

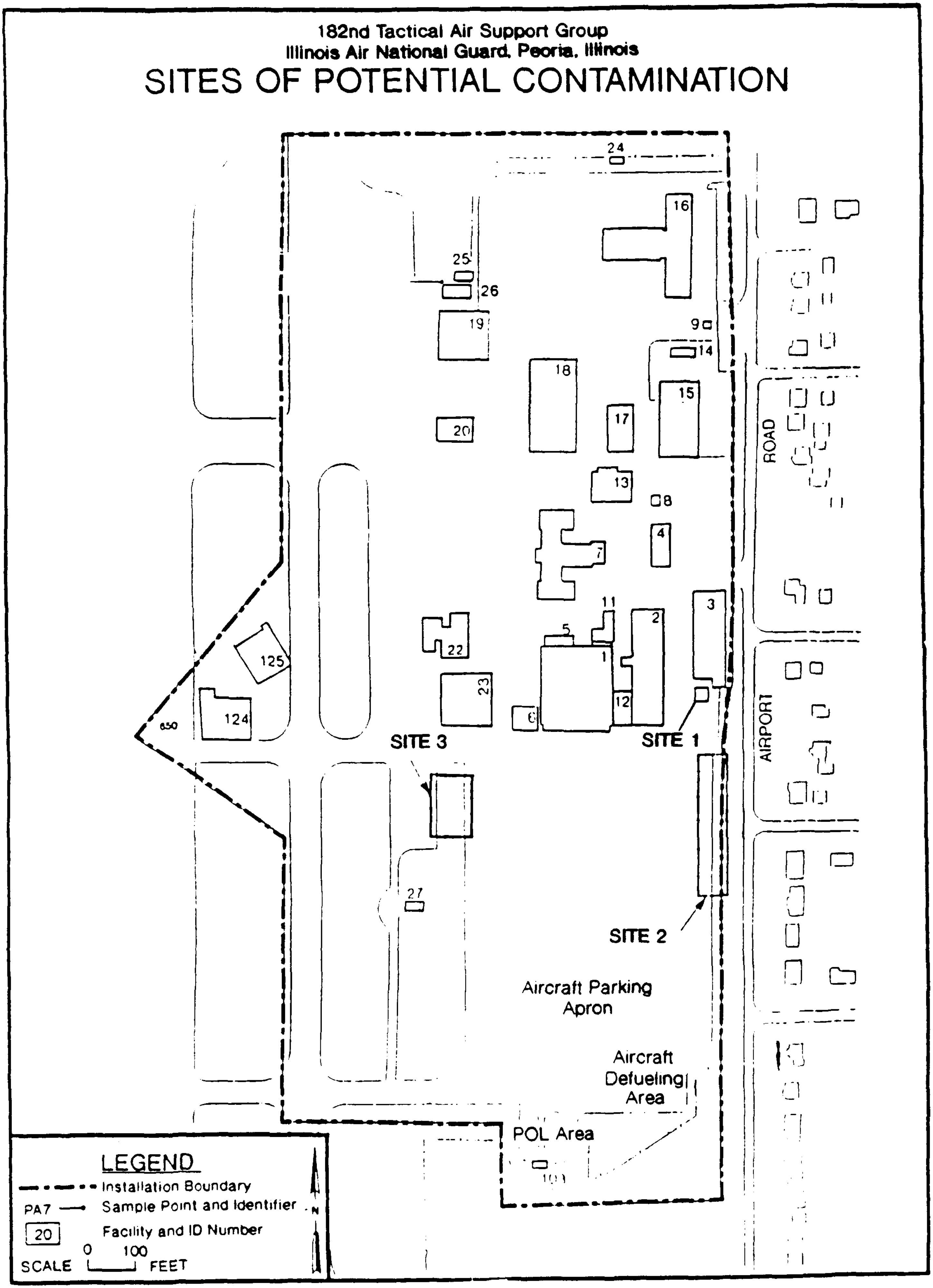




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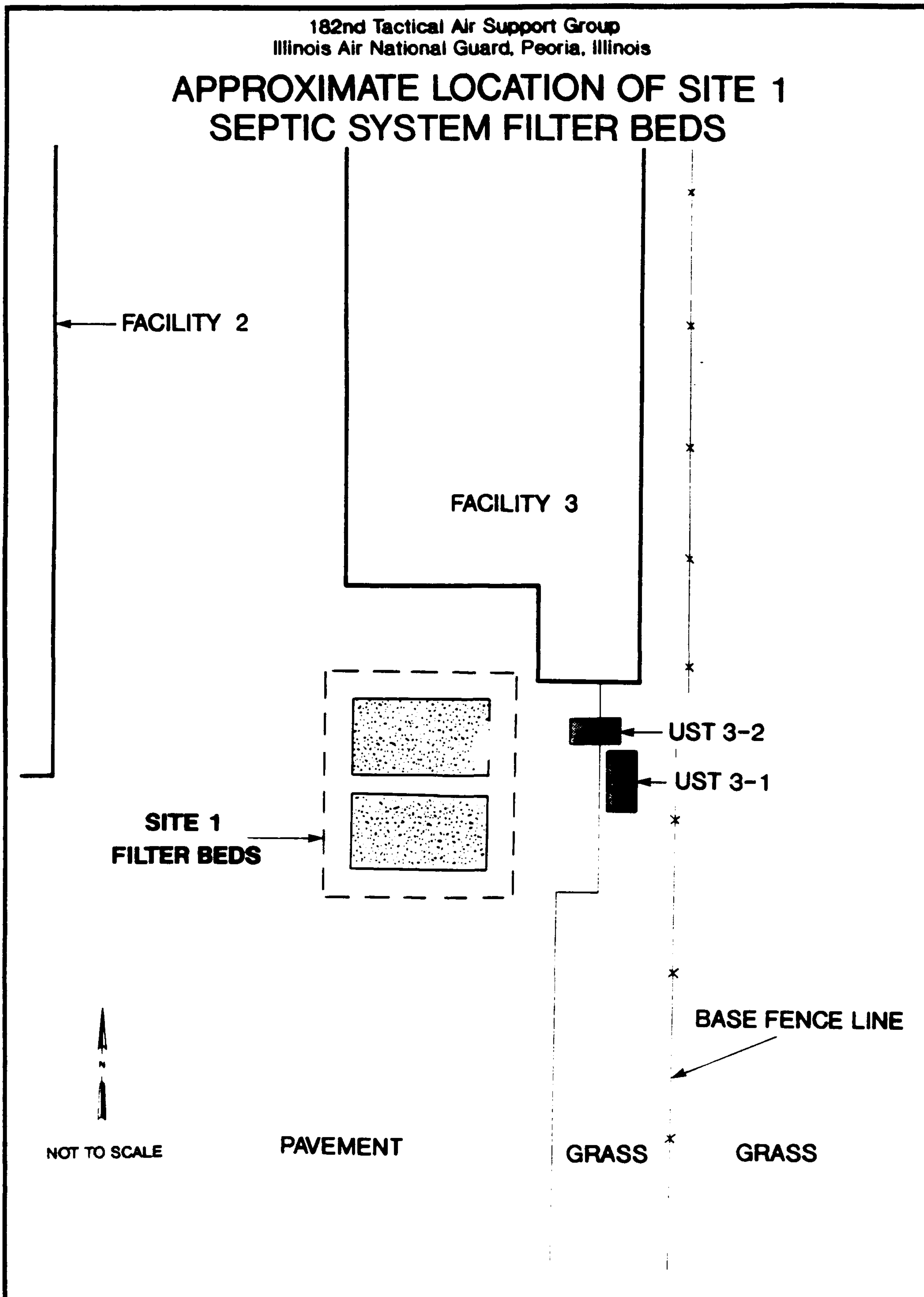
FIGURE 4.2

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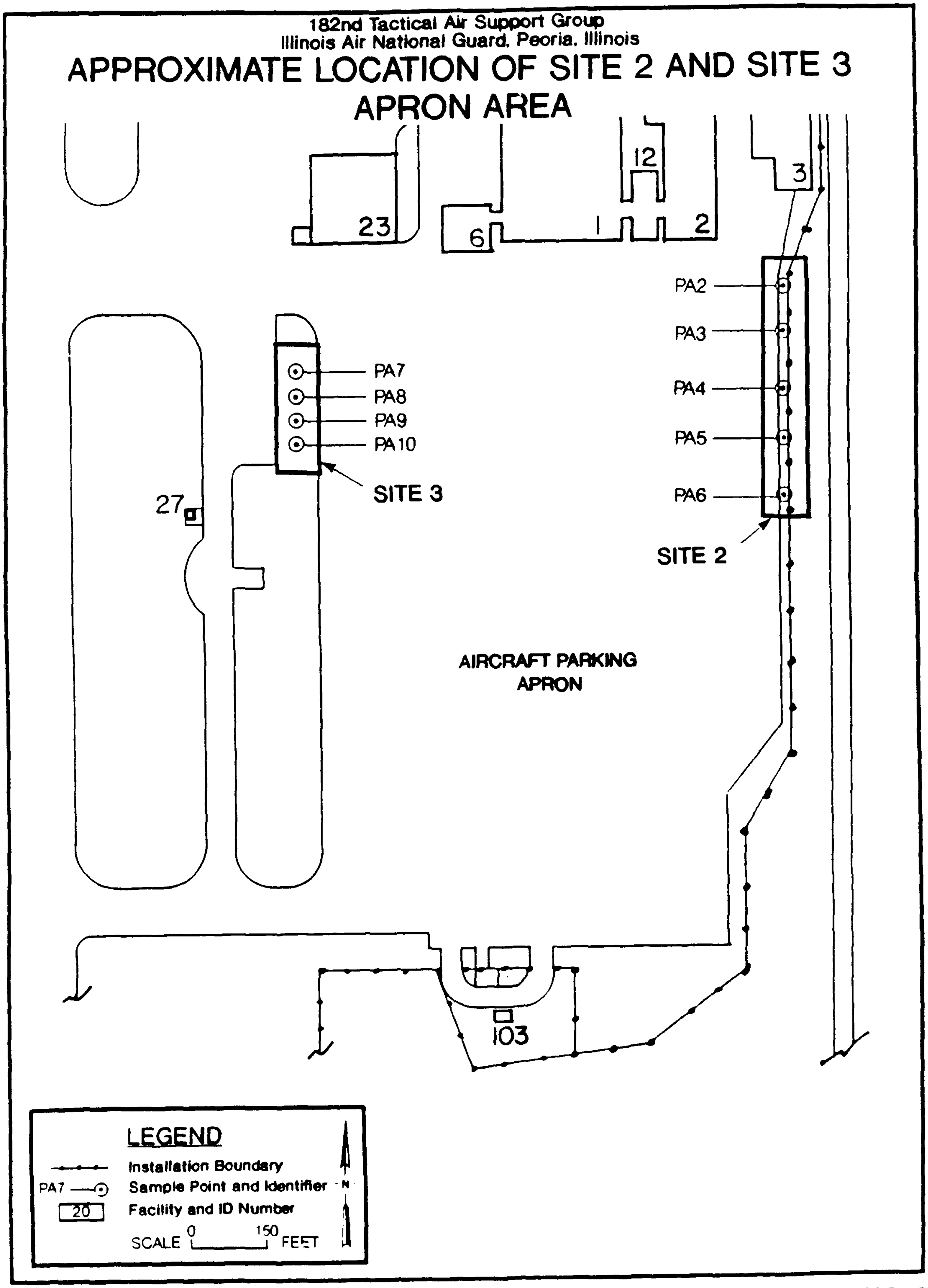
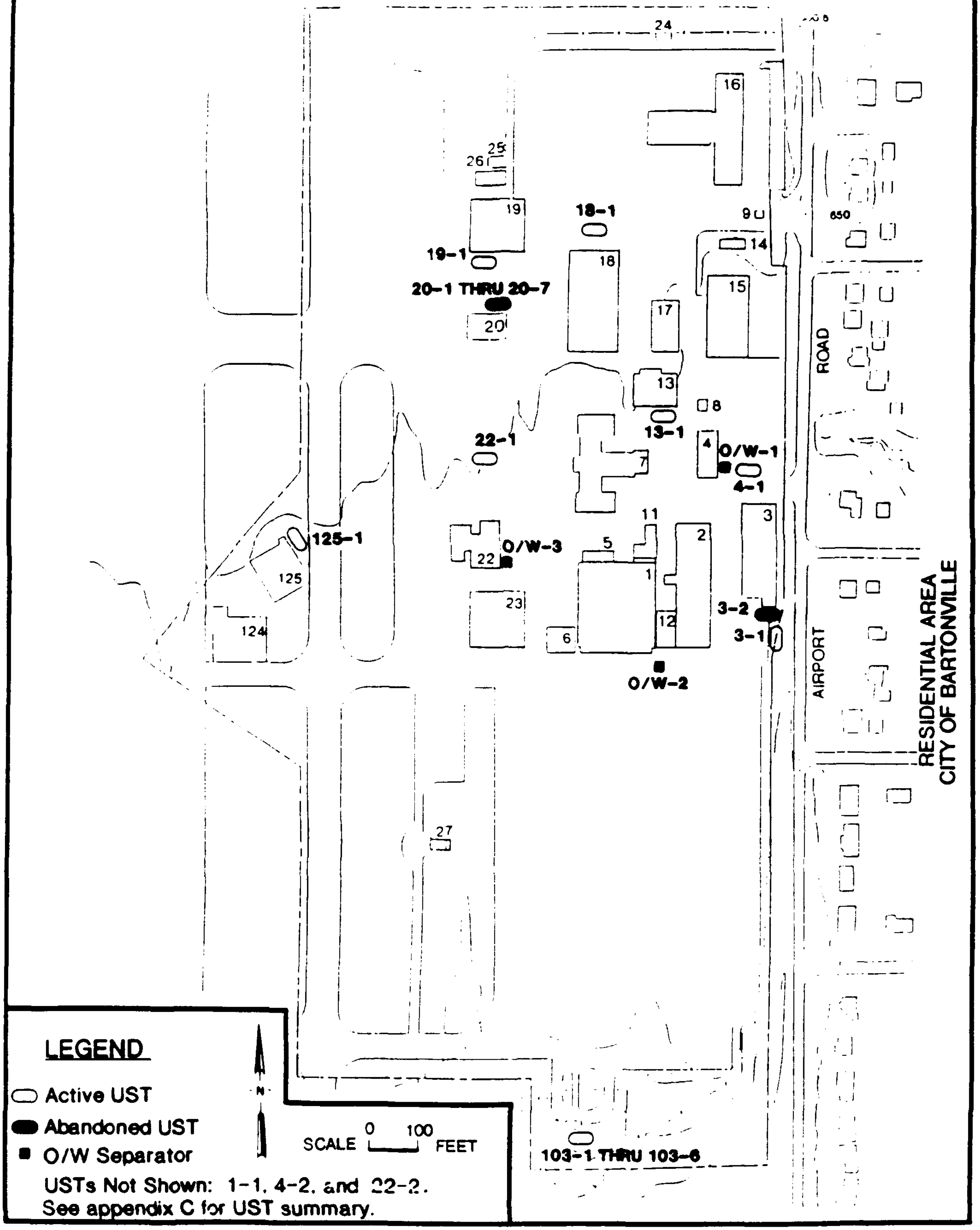

182nd Tactical Air Support Group
Illinois Air National Guard, Peoria, Illinois
APPROXIMATE LOCATION OF SITE 2 AND SITE 3
APRON AREA
23
6
1
12
2
3
PA2
PA3
PA4
PA5
PA6
SITE 2
PA7
PA8
PA9
PA10
SITE 3
27
AIRCRAFT PARKING
APRON
103
LEGEND
Installation Boundary
PA7
Sample Point and Identifier
20
Facility and ID Number
SCALE
0
150
FEET
N

182nd Tactical Air Support Group
Illinois Air National Guard, Peoria, Illinois

# LOCATIONS OF UNDERGROUND STORAGE TANKS AND OIL/WATER SEPARATORS

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# SECTION 5
# CONCLUSIONS

## SECTION 5
## CONCLUSIONS

Three sites of possible contamination were identified at the 182nd TASG and exhibit the potential for environmental contamination.

# SECTION 6
# RECOMMENDATIONS

## SECTION 6
## RECOMMENDATIONS

In accordance with applicable regulations, further IRP investigations are recommended for Sites 1, 2 and 3.

## APPENDIX A
## RESUMES OF SEARCH TEAM MEMBERS

**Biographical Data**

**PHILIP C. PERLEY, P.G.**

**Project Manager**

**EXPERIENCE SUMMARY**

Extensive experience in design and implementation of hydrologic and geologic investigative programs at hazardous waste sites, high and low-level radioactive waste sites, surface and underground mining operations, and abandoned mined land sites. Experience includes: design and supervision of monitoring well construction, ground-water monitoring, surface water monitoring, soil sampling programs; and preparation of feasiblitiy studies and permit applications for prospective mineral properties. administrative responsibilities include preparation and implementation of Task Order Contracts and scoring of project plans from scope of work statements.

**EXPERIENCE RECORD**

1987-Date Engineering Science, Inc. **Hydrogeologist.** Responsible for conducting hydrological and geophysical investigations at inactive and active hazardous waste sites. Project Manager for the U.S. Air Force Site Investigation and Remedial Investigation, Installation Restoration Program (IRP) investigation at Offutt AFB, Nebraska. Duties include design and supervision of monitoring well construction, ground-water sampling, soil boring and sampling, geophysical data interpretation, plume delineation, and report preparation.

Additional project responsiblities have included Preliminary Assessment and immediate response including design and implementation of soil boring programs thru remedial design and report preparation for the Peoria Air National Guard Base, Illinois.

Prepared Records of Decisions for IRP sites at the following bases: Peoria ANGB, Eglin AFB, and USAF Plant 42.

Geophysical investigations include surface electrical resistivity and magnetometer surveys.

1984-1987 Georgia Environmental Protection Division, Geologic Survey Branch, Atlanta, Georgia. **Principal Geologist.**

Division duty officer, Emergency Response Team. Responsible for screening and routing all emergency spill reports and determining appropriate level of response.

Technical coordinator of activities between the Georgia Environmental Protection Division (EPD), U. S. Department of Energy (DOE) Crystalline Repository Project Office, DOE contractors, and other effected States. Responsibilities included maintaining technical expertise and performing technical reviews of information related to the development of an effective State Policy with regard to the disposal of high-level radioactive waste including geology, hydrogeology, and environmental protection. Responsible for writing EPD responses to DOE documents. Assisted members of the Georgia congressional delegation in formulating testimony at DOE and Congressional hearings. Developed EPD's response to Congressional hearings and

*amicus curiae* briefs. Interacted with southeastern states to develop a regional policy to DOE activities.

Assisted Program Coordination Branch of EPD in the review and development of weighting criteria for the disposal of low-level radioactive waste.

1982-1983 Grasslake Minerals and Mining, Denver, Colorado. **Senior Project Geologist.** Responsible for developing and implementing a geochemical sampling program and evaluating economic potential of prospects in the Central City Mining District.

1978-1982 Magcobar Minerals Division, Dresser Industries, Houston. **Project Geologist.** Duties included preliminary prospect investigations, initiation and execution of exploration programs and development of geologic reports. Responsible for the assessment of mineral prospects in Ireland, Morocco, Turkey, United Kingdom and United States. Established exploration office in Morocco, supervised drilling activities at all locations and was responsible for interpretation of geologic data.

## EDUCATION

B.A., Geology, 1975, Humboldt State University, Arcata, California

M.S., Geology, 1982, University of Idaho, Moscow, Idaho

Graduate studies in Hydrogeology and Business Administration, Georgia State University, Atlanta, Georgia

## PROFESSIONAL AFFILIATIONS

Registered Professional Geologist, Georgia No. 650
Society of Mining Engineers

## PAPERS AND PRESENTATIONS

"Uranium Potential and Geology of the Challis Volcanics of the Basin Creek-Yankee Fork Area, Custer County, Idaho", 1979, U. S. Department of Energy (Co-authors: D. F. Albers, R. W. Malloy, V. Mitchell, P. L. Siems)

"Geology of the Upper Basin Creek - Upper West Fork, Yankee Fork Area, Custer County, Idaho", M. S. Thesis, 1982.

"Geology of Selected Mafic and Ultramafic Rocks of Georgia: A Review," in Press. (Co-authors: K. I. McConnell and H. R. Vincent).

"Georgia's Response to the Draft Area Recommendation Report for the Crystalline Repository Project, Office of Civilian Radioactive Waste Management" (CRP, OCRWM), 1986, principal author.

"Georgia's Response to the Draft Regional Environmental and Geologic Characterization Reports, CRP, OCRWM", 1985, principal author.

"Georgia's Response to the Draft Region-To-Area Screening Methodology Document, CRP, OCRWM", 1985, principal author.

**Biographical Data**

**ERIC J. HAYDU**

**Chemical Engineer**

EXPERIENCE SUMMARY

Experience includes environmental remediation and the treatment of hazardous materials.

EXPERIENCE RECORD

| | |
|---|---|
| 1988-Date | Engineering-Science, Inc., **Chemical Engineer**. Involved in U.S. Air Force Installation Restoration Programs. Responsibilities incl..de Project Engineer, Field Team Leader, data validation and review, records search, and report generation. |
| 1987-1988 | O.H. Materials Corp., Findlay, Ohio, **Chemical Engineer I**. Managed site operations of a groundwater recovery/injection well and biotreatment system. Designed mobile water-treatment systems. Generated documents submitted to the U.S. Environmental Protection Agency and potential clients. Performed treatability studies on water, sludge, and soil. |
| 1986-1987 | City of Toledo, Department of Public Utilities, Toledo, Ohio, **Engineering Intern**. Performed technical and investigative work in identifying potentially responsible parties liable for response costs pertaining to landfills containing hazardous materials. Gained legal as well as technical knowledge. |
| 1986 | Toledo Environmental Services Agency, Toledo, Ohio, **Engineer Trainee**. Involved in projects related to the City of Toledo Air Pollution Enforcement Program. Inspected sources of fugitive dust air pollution, obtained permit applications for those sources, worked with the source owners to get emission problems corrected, and drafted special terms and conditions for the permits. Developed a working knowledge of various industries. |
| 1985 | Haydu Associates, Inc., Technical Services Group, Rocky Hill, New Jersey, **Quality Assurance**. Involved in many aspects of a technical services firm. Directed pickling and passivation operations of industrial piping. |

EDUCATION

B.S., Chemial Engineering, University of Toledo, 1987.

CERTIFICATIONS

Engineer-In-Training, Ohio, 1987.

PROFESSIONAL AFFILIATIONS

American Institute of Chemical Engineers

BD 1/89

**Biographical Data**

**THOMAS M. ROTH**

**Geological Engineer**

EXPERIENCE SUMMARY

Experienced in preparation of remedial investigations, feasibility studies, and remedial designs for uncontrolled hazardous waste sites. Emphasis on groundwater monitoring and hydrogeology. Experienced in implementation of CERCLA and SARA and in compliance with other federal environmental regulations.

EXPERIENCE RECORD

1988-date Engineering Science, Inc. **Geological Engineer**. Preparation of environmental studies and evaluations for municipal, industrial, and government projects. Supervision of monitoring well installation and soil and groundwater sampling at hazardous waste spill and disposal sites.

Participated in the preparation of RCRA Part B permit application for a hazardous waste storage facility at a chemical manufacturing plant in Ohio. Evaluated the facility's compliance with RCRA and state regulations, wrote supporting documentation, and proposed changes to current procedures.

Prepared Spill Prevention, Control, and Countermeasure (SPCC) plan for bulk oil storage at New York manufacturing facility. SPCC Plan included procedures for inspection and maintenance of storage tanks and containment systems, identified potential spill impacts, outlined actions to be taken in the event of an accidental release, and made recommendations concerning a secondary containment system.

Authored sections of report which examined the history of chemical waste disposal practices and environmental regulations in the United States. Researched state and federal environmental laws enacted since 1900.

Assisted in the preparation of a request for proposals to remove, transport, and incinerate capacitors filled with PCB-laden oils from a former heavy-equipment manufacturing facility in Georgia. Evaluated proposals and participated in contract development for performance of these activities.

Assisted in preliminary assessment of an Air National Guard base to determine past waste disposal practices and to evaluate potential areas of contamination. Reviewed facility records, interviewed base personnel, and sampled areas of possible soil contamination.

1986-1988 U.S. Environmental Protection Agency, Atlanta, Georgia.

**Environmental Engineer**. Provided technical review of remedial designs for hazardous waste site cleanups, prepared plans and specifications for monitoring well installation, groundwater sampling, and soil sampling.

**Remedial Project Manager**. Monitored development of remedial investigations, feasibility studies, and remedial designs for Superfund sites. Responsible for evaluating compliance of site cleanups with provisions of CERCLA/SARA,

RCRA, TSCA, CWA, SDWA, and state environmental regulations. Authored two records-of-decisions which provided the rationale for selecting cleanup alternatives under CERCLA/SARA and demonstrated compliance with federal and state regulations. Coordinated activities between federal, state, and local governments. Provided technical review of data and reports pertaining to hazardous waste site investigations and remedial designs.

**EDUCATION**

B.S. in Geological Engineering, 1985, University of Missouri - Rolla.

**REGISTRATION**

Engineer-in-Training, 1986.

**PROFESSIONAL AFFILIATIONS**

Association of Engineering Geologists.

# APPENDIX B
# OUTSIDE AGENCY CONTACT LIST

## APPENDIX B
## OUTSIDE AGENCY CONTACT LIST

1. Brent B. Gregory
   Illinois American Water Company
   123 SW Washington St.
   Peoria, Illinois 61602
   Telephone: (309)671-3700

2. Paul Keturi
   Greater Peoria Sanitary Sewer District
   2322 Darst Street
   Peoria, Illinois
   Telephone: (309)637-3511

3. U.S. Soil Conservation Service
   Peoria County District
   2412 West Nebraska Ave.
   Peoria, Illinois 61604
   Telephone: (309)671-7106

4. Kathy Parrish
   U.S. Department of Agriculture
   Aerial Photography Field Office
   P.O. Box 30010
   Salt Lake City, Utah, 84130

5. Robert E. Richardson
   Cartographic and Architectural Branch
   National Archieves
   Washington, D.C.

6. Raman K. Raman
   Illinois State Water Survey
   Peoria, Illinois
   Telephone: (309)671-3196

7. Librarian
Illinois Geologic Survey
615 East Penbody Drive
Champaign, Illinois
Telephone: (217) 344-1481

8. Mr. Brian Martin
Land Pollution Control Branch
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706

9. Mr. Joe F. Goodner
Office of Chemical Safety
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706

10. Mr. John Richardson
HAZWASTE Regional Coordintor
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706

**APPENDIX C**
**STORAGE TANKS**

## UNDERGROUND STORAGE TANK INFORMATION
## 182ND TASG ANGB, PEORIA, ILLINOIS

| Tank Number | Contents | Capacity (Gallons) | Age (Years) | Construction | Protection | Facility Serviced | Status |
|---|---|---|---|---|---|---|---|
| 1-1 | Used Oil | 500 | 8 | Steel | Paint | 1 | Active |
| 3-1 | Heating Oil | 4,000 | 10 | Steel | Paint | 3 | Active |
| 3-2 | Heating Oil (?) | 2,000 | 35 | Steel | Paint | - | Abandoned[a] |
| 4-1 | Gasoline | 4,000 | 30 | Steel | Paint | 4 | Active |
| 4-2 | Used Oil | 500 | 10 | Steel | Paint | 4 | Active |
| 13-1 | Backup Heating Oil | 1,100 | unknown | Steel | Paint | 13 | Active |
| 18-1 | Backup Heating Oil/JP-4 | 10,000 | 8 | Steel | Cathodic/Paint | 18 | Active |
| 19-1 | Diesel Fuel | 2,000 | 21 | Steel | Paint | 19 | Active |
| 20-1 | Avgas (80 Octane) | 4,000 | unknown | Steel | Paint | - | Abandoned[b] |
| 20-2 | Avgas (91 Octane) | 3,000 | unknown | Steel | Paint | - | Abandoned[b] |
| 20-3 | Avgas (91 Octane) | 5,000 | unknown | Steel | Paint | - | Abandoned[b] |
| 20-4 | Avgas (100 Octane) | 5,000 | unknown | Steel | Paint | - | Abandoned[b] |
| 20-5 | Avgas (100 Octane) | 3,000 | unknown | Steel | Paint | - | Abandoned[b] |
| 20-6 | Avgas (100 Octane) | 5,000 | unknown | Steel | Paint | - | Abandoned[b] |
| 20-7 | Avgas (91 Octane) | 5,000 | unknown | Steel | Paint | - | Abandoned[b] |
| 22-1 | Heating Oil | 4,000 | 8 | Steel | Cathodic/Paint | 22 | Active |
| 22-2 | Used Oil | 560 | 8 | Steel | Paint | 22 | Active |
| 103-1 | JP-4 | 25,000 | 35 | Steel | Cathodic/Paint | 103 | Active |
| 103-2 | JP-4 | 25,000 | 35 | Steel | Cathodic/Paint | 103 | Active |
| 103-3 | JP-4 | 25,000 | 35 | Steel | Cathodic/Paint | 103 | Active |
| 103-4 | JP-4 | 12,000 | 35 | Steel | Cathodic/Paint | 103 | Active |
| 103-5 | JP-4 | 12,000 | 35 | Steel | Cathodic/Paint | 103 | Active |
| 103-6 | JP-4 | 12,000 | 35 | Steel | Cathodic/Paint | 103 | Active |
| 125-1 | Used Oil | 500 | 8 | Steel | Cathodic/Paint | 125 | Active |

a. Tank 3-2 abandoned around 1979.

b. Tanks 20-1 through 20-7 abandoned around 1960.
These tanks were operated by the Airport Fixed Base Operator prior to the National Guard Bureau obtaining property.

## APPENDIX D
## USAF HAZARD ASSESSMENT RATING METHODOLOGY

## APPENDIX D
## USAF HAZARD ASSESSMENT RATING METHODOLOGY

### BACKGROUND

The Department of Defense (DOD) has established a comprehensive program to identify, evaluate, and control problems associated with past disposal practices at DOD facilities. One of the actions required under this program is to:

> "develop and maintain a priority listing of contaminated installations and facilities for remedial action based on potential hazard to public health, welfare, and environmental impacts." (Reference: DEQPPM 81-5, 11 December 1981).

Accordingly, the United States Air Force (USAF) has sought to establish a system to set priorities for taking further action at sites based upon information gathered during the Preliminary Assessment phase of the Installation Restoration Program (IRP).

The first site rating model was developed in June 1981 at a meeting with representatives from USAF Occupational and Environmental Health Laboratory (OEHL), Air Force Engineering and Services Center (AFESC), Engineering-Science, Inc. (ES) and CH2M Hill. The basis for this model was a system developed for EPA by JRB Associates of McLean, Virginia. The JRB model was modified to meet Air Force needs.

After using this model for six months at over 20 Air Force installations, certain inadequacies became apparent. Therefore, on January 26 and 27, 1982, representatives of USAF OEHL, AFESC, various major commands, ES and CH2M Hill met to address the inadequacies. The result of the meeting was a new site rating model designed to present a better picture of the hazards posed by sites at Air Force installations. The new rating model described in this presentation is referred to as the Hazard Assessment Rating Methodology.

## PURPOSE

The purpose of the site rating model is to provide a relative ranking of sites of suspected contamination from hazardous substances. This model will assist the National Guard in setting priorities for follow-on site investigations.

This rating system is used only after it has been determined that (1) potential for contamination exists (hazardous wastes present in sufficient quantity), and (2) potential for migration exists. A site can be deleted from consideration for rating on either basis.

## DESCRIPTION OF MODEL

Like the other hazardous waste site ranking models, the U.S. Air Force's site rating model uses a scoring system to rank sites for priority attention. However, in developing this model, the designers incorporated some special features to meet specific DOD program needs.

The model uses data readily obtained during the Preliminary Assessment portion of the IRP. Scoring judgments and computations are easily made. In assessing the hazards at a given site, the model develops a score based on the most likely routes of contamination and the worst hazards at the site. Sites are given low scores only if there are clearly no hazards at the site. The approach meshes well with the policy for evaluating and setting restrictions on excess DOD properties.

Site scores are developed using the appropriate ranking factors presented in Figure G.1. The site rating form and the rating factor guidelines are provided at the end of this appendix.

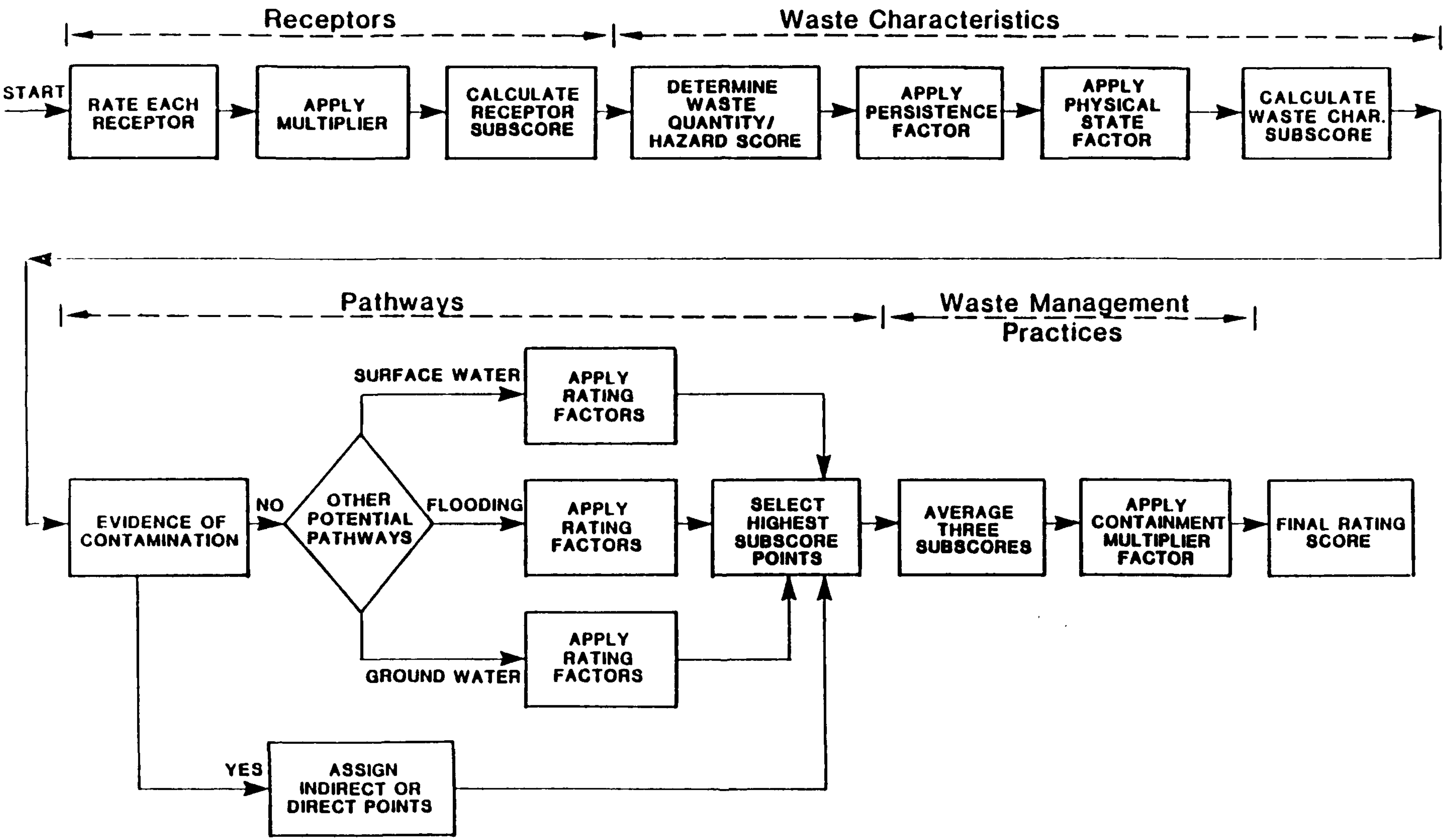
As with the previous model, this model considers four aspects of the hazard posed by a specific site: (1) the possible receptors of the contamination, (2) the waste and its characteristics, (3) the potential pathways for contamination migration, and (4) any effort that was made to contain the waste resulting from a spill.

The receptors category rating is based on four rating factors: (1) the potential for human exposure to the site, (2) the potential for human ingestion of contaminants should underlying aquifers be polluted, (3) the current and anticipated use of the surrounding area, and (4) the potential for adverse effects upon important biological resources and fragile natural settings. The potential for human exposure is evaluated on the basis of the total population within 1000 feet of the site, and the distance between the site and the base boundary. The potential for human ingestion

Figure D.1

182nd Tactical Air Support Group
Illinois Air National Guard, Peoria, Illinois

# HAZARD ASSESSMENT RATING METHODOLOGY FLOW CHART



of contaminants is based on the distance between the site and the nearest well, the groundwater use of the uppermost aquifer, and population served by the ground-water supply within three miles of the site. The uses of the surrounding area are determined by the zoning within a one-mile radius. Determination of whether or not critical environments exist within a one-mile radius of the site predicts the potential for adverse effects from the site upon important biological resources and fragile natural settings. Each rating factor is numerically evaluated (0-3) and increased by a multiplier. The maximum possible score is also computed. The factor score and maximum possible scores are totaled, and the receptors subscore computed as follows: receptors subscore = (100 x factor subtotal/maximum score subtotal).

The waste characteristics category is scored in three steps. First, a point rating is assigned based on an assessment of the waste quantity and the hazard (worst case) associated with the site. The level of confidence in the information is also factored into the assessment. Next, the score is multiplied by a waste persistence factor, which acts to reduce the score if the waste is not very persistence. Finally, the score is further modified by the physical state of the waste. Liquid wastes receive the maximum score while scores for solids are reduced.

The pathways category rating is based on evidence of contaminant migration along one of three pathways: surface water migration, flooding, and ground-water migration. If evidence of contaminant migration exists, the category is given a subscore of 80 to 100 points. For indirect evidence, 80 points are assigned, and for direct evidence, 100 points are assigned. If no evidence is found, the highest score among the three possible routes is used. The three pathways are evaluated and the highest score among all four of the potential scores is used.

The scores for each of the three categories are added together and normalized to a maximum possible score of 100. Then the waste management practice category is scored. Scores for sites with no containment are not reduced. Scores for sites with limited containment can be reduced by 5 percent. If a site is contained and well-managed, its score can be reduced by 90 percent. The final site score is calculated by applying the waste management practices category factor to the sum of the score for the other three categories.

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE ______________________________

LOCATION ______________________________

DATE OF OPERATION OR OCCURRENCE ______________________________

OWNER/OPERATOR ______________________________

COMMENTS/DESCRIPTION ______________________________

SITE RATED BY ______________________________

I. RECEPTORS

| Rating Factor | Factor Rating (0-3) | Multiplier | Factor Score | Maximum Possible Score |
|---|---|---|---|---|
| A. Population within 1,000 ft. of site | | 4 | | |
| B. Distance to nearest well | | 10 | | |
| C. Land use/zoning within 1 mile radius | | 3 | | |
| D. Distance to installation boundary | | 6 | | |
| E. Critical environments within 1 mile radius of site | | 10 | | |
| F. Water quality of nearest surface water body | | 6 | | |
| G. Groundwater use of uppermost aquifer | | 9 | | |
| H. Population served by surface water supply within 3 miles downstream of site | | 6 | | |
| I. Population served by groundwater supply within 3 miles of site | | 6 | | |

Subtotals ______ ______

Receptors subscore (100 x factor score subtotal/maximum score subtotal) ______

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) ______

2. Confidence level (C = confirmed, S = suspected) ______

3. Hazard rating (H = high, M = medium, L = low) ______

Factor Subscore A (from 20 to 100 based on factor score matrix) ______

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

______ x ______ = ______

C. Apply physical state multiplier
Subscore B x Physical State Multiplier = Waste Characteristics Subscore

______ x ______ = ______

## III. PATHWAYS

| Rating Factor | Factor Rating (0-3) | Multiplier | Factor Score | Maximum Possible Score |
|---|---|---|---|---|

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore ______

B. Rate the migration potential for 3 potential pathways: Surface water migration, flooding, and groundwater migration. Select the highest rating, and proceed to C.

1. Surface water migration

| Rating Factor | Factor Rating (0-3) | Multiplier | Factor Score | Maximum Possible Score |
|---|---|---|---|---|
| Distance to nearest surface water | | 8 | | |
| Net precipitation | | 6 | | |
| Surface erosion | | 8 | | |
| Surface permeability | | 6 | | |
| Rainfall intensity | | 8 | | |
| Subtotals | | | ______ | ______ |

Subscore (100 x factor score subtotal/maximum score subtotal) ______

2. Flooding

| Rating Factor | Factor Rating (0-3) | Multiplier | Factor Score | Maximum Possible Score |
|---|---|---|---|---|
| Flooding | | 1 | | |

Subscore (100 x factor score/3) ______

3. Groundwater migration

| Rating Factor | Factor Rating (0-3) | Multiplier | Factor Score | Maximum Possible Score |
|---|---|---|---|---|
| Depth to groundwater | | 8 | | |
| Net precipitation | | 6 | | |
| Soil permeability | | 8 | | |
| Subsurface flows | | 8 | | |
| Direct access to groundwater | | 8 | | |
| Subtotals | | | ______ | ______ |

Subscore (100 x factor score subtotal/maximum score subtotal) ______

C. Highest pathway subscore

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore ______

## IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors ______
Waste Characteristics ______
Pathways ______

Total ______ divided by 3 = ______
Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score x Waste Management Practices Factor = Final Score

______ x ______ = ______

# APPENDIX E
# SITE HAZARD ASSESSMENT RATING FORMS

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE Site 1

LOCATION South of Facility 3, approximately 75 ft west of east fence

DATE OF OPERATION OR OCCURRENCE Estimated sometime between 1951 and 1963

OWNER/OPERATOR Illinois Air National Guard, Greater Peoria Airport

COMMENTS/DESCRIPTION Filter beds no longer in operation, area has been paved

SITE RATED BY P.C. Perley

I. RECEPTORS

| Rating Factor | Factor Rating (0-3) | Multiplier | Factor Score | Maximum Possible Score |
|---|---|---|---|---|
| A. Population within 1,000 ft. of site | 3 | 4 | 12 | 12 |
| B. Distance to nearest well | 0 | 10 | 0 | 30 |
| C. Land use/zoning within 1 mile radius | 3 | 3 | 9 | 9 |
| D. Distance to installation boundary | 3 | 6 | 18 | 18 |
| E. Critical environments within 1 mile radius of site | 0 | 10 | 0 | 30 |
| F. Water quality of nearest surface water body | 1 | 6 | 6 | 18 |
| G. Groundwater use of uppermost aquifer | 0 | 9 | 0 | 27 |
| H. Population served by surface water supply within 3 miles downstream of site | 0 | 6 | 0 | 18 |
| I. Population served by groundwater supply within 3 miles of site | 0 | 6 | 0 | 18 |
| Subtotals | | | 45 | 180 |

Receptors subscore (100 x factor score subtotal/maximum score subtotal) 25

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) M
2. Confidence level (C = confirmed, S = suspected) C
3. Hazard rating (H = high, M = medium, L = low) H

Factor Subscore A (from 20 to 100 based on factor score matrix) 80

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

1.0 x 80 = 80

C. Apply physical state multiplier
Subscore B x Physical State Multiplier = Waste Characteristics Subscore

80 x 1.0 = 80

III. PATHWAYS

| Rating Factor | Factor Rating (0-3) | Multiplier | Factor Score | Maximum Possible Score |
|---|---|---|---|---|

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore 0

B. Rate the migration potential for 3 potential pathways: Surface water migration, flooding, and groundwater migration. Select the highest rating, and proceed to C.

1. Surface water migration

| Rating Factor | Factor Rating (0-3) | Multiplier | Factor Score | Maximum Possible Score |
|---|---|---|---|---|
| Distance to nearest surface water | 3 | 8 | 24 | 24 |
| Net precipitation | 1 | 6 | 6 | 18 |
| Surface erosion | 1 | 8 | 8 | 24 |
| Surface permeability | 1 | 6 | 6 | 18 |
| Rainfall intensity | 2 | 8 | 16 | 24 |
| Subtotals | | | 60 | 108 |

Subscore (100 x factor score subtotal/maximum score subtotal) 56

2. Flooding

| Rating Factor | Factor Rating (0-3) | Multiplier | Factor Score | Maximum Possible Score |
|---|---|---|---|---|
| Flooding | 0 | 1 | 0 | 3 |

Subscore (100 x factor score/3) 0

3. Groundwater migration

| Rating Factor | Factor Rating (0-3) | Multiplier | Factor Score | Maximum Possible Score |
|---|---|---|---|---|
| Depth to groundwater | 2 | 8 | 16 | 24 |
| Net precipitation | 1 | 6 | 6 | 18 |
| Soil permeability | 1 | 8 | 8 | 24 |
| Subsurface flows | 0 | 8 | 0 | 24 |
| Direct access to groundwater | 0 | 8 | 0 | 24 |
| Subtotals | | | 30 | 114 |

Subscore (100 x factor score subtotal/maximum score subtotal) 26

C. Highest pathway subscore

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore 56

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

| | |
|---|---|
| Receptors | 25 |
| Waste Characteristics | 80 |
| Pathways | 56 |
| Total 161 divided by 3 = | 54 Gross Total Score |

B. Apply factor for waste containment from waste management practices

Gross Total Score x Waste Management Practices Factor = Final Score

54 x 1.0 = $\boxed{54}$

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE Site 2

LOCATION Spill south of Facility 3 along the Base fence

DATE OF OPERATION OR OCCURRENCE Estimated between 1947 and 1975

OWNER/OPERATOR Illinois Air National Guard, Greater Peoria Airport

COMMENTS/DESCRIPTION Grass Area

SITE RATED BY P.C. Perley

## I. RECEPTORS

| Rating Factor | Factor Rating (0-3) | Multiplier | Factor Score | Maximum Possible Score |
|---|---|---|---|---|
| A. Population within 1,000 ft. of site | 3 | 4 | 12 | 12 |
| B. Distance to nearest well | 0 | 10 | 0 | 30 |
| C. Land use/zoning within 1 mile radius | 3 | 3 | 9 | 9 |
| D. Distance to installation boundary | 3 | 6 | 18 | 18 |
| E. Critical environments within 1 mile radius of site | 0 | 10 | 0 | 30 |
| F. Water quality of nearest surface water body | 1 | 6 | 6 | 18 |
| G. Groundwater use of uppermost aquifer | 0 | 9 | 0 | 27 |
| H. Population served by surface water supply within 3 miles downstream of site | 0 | 6 | 0 | 18 |
| I. Population served by groundwater supply within 3 miles of site | 0 | 6 | 0 | 18 |
| Subtotals | | | 45 | 180 |

Receptors subscore (100 x factor score subtotal/maximum score subtotal) 25

## II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) M
2. Confidence level (C = confirmed, S = suspected) C
3. Hazard rating (H = high, M = medium, L = low) H

Factor Subscore A (from 20 to 100 based on factor score matrix) 80

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

1.0 x 80 = 80

C. Apply physical state multiplier
Subscore B x Physical State Multiplier = Waste Characteristics Subscore

80 x 1.0 = 30

III. PATHWAYS

| Rating Factor | Factor Rating (0-3) | Multiplier | Factor Score | Maximum Possible Score |
|---|---|---|---|---|

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore 0

B. Rate the migration potential for 3 potential pathways: Surface water migration, flooding, and groundwater migration. Select the highest rating, and proceed to C.

1. Surface water migration

| Rating Factor | Factor Rating (0-3) | Multiplier | Factor Score | Maximum Possible Score |
|---|---|---|---|---|
| Distance to nearest surface water | 3 | 8 | 24 | 24 |
| Net precipitation | 1 | 6 | 6 | 18 |
| Surface erosion | 1 | 8 | 8 | 24 |
| Surface permeability | 1 | 6 | 6 | 18 |
| Rainfall intensity | 2 | 8 | 16 | 24 |
| | | Subtotals | 60 | 108 |

Subscore (100 x factor score subtotal/maximum score subtotal) 56

2. Flooding

| Rating Factor | Factor Rating (0-3) | Multiplier | Factor Score | Maximum Possible Score |
|---|---|---|---|---|
| Flooding | 0 | 1 | 0 | 3 |

Subscore (100 x factor score/3) 0

3. Groundwater migration

| Rating Factor | Factor Rating (0-3) | Multiplier | Factor Score | Maximum Possible Score |
|---|---|---|---|---|
| Depth to groundwater | 2 | 8 | 16 | 24 |
| Net precipitation | 1 | 6 | 6 | 18 |
| Soil permeability | 1 | 8 | 8 | 24 |
| Subsurface flows | 0 | 8 | 0 | 24 |
| Direct access to groundwater | 0 | 8 | 0 | 24 |
| | | Subtotals | 30 | 114 |

Subscore (100 x factor score subtotal/maximum score subtotal) 26

C. Highest pathway subscore

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore 56

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

| | |
|---|---|
| Receptors | 25 |
| Waste Characteristics | 30 |
| Pathways | 56 |

Total 161 divided by 3 = 54 Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score x Waste Management Practices Factor = Final Score

54 x 1.0 = 54

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE Site 3

LOCATION Between the Aircraft Apron and the Fuel Truck Parking Area

DATE OF OPERATION OR OCCURRENCE Estimated between 1947 and 1975

OWNER/OPERATOR Illinois Air National Guard, Greater Peoria Airport

COMMENTS/DESCRIPTION Grass Area

SITE RATED BY P.C. Perley

I. RECEPTORS

| Rating Factor | Factor Rating (0-3) | Multiplier | Factor Score | Maximum Possible Score |
|---|---|---|---|---|
| A. Population within 1,000 ft. of site | 3 | 4 | 12 | 12 |
| B. Distance to nearest well | 0 | 10 | 0 | 30 |
| C. Land use/zoning within 1 mile radius | 3 | 3 | 9 | 9 |
| D. Distance to installation boundary | 3 | 6 | 18 | 18 |
| E. Critical environments within 1 mile radius of site | 0 | 10 | 0 | 30 |
| F. Water quality of nearest surface water body | 1 | 6 | 6 | 18 |
| G. Groundwater use of uppermost aquifer | 0 | 9 | 0 | 27 |
| H. Population served by surface water supply within 3 miles downstream of site | 0 | 6 | 0 | 18 |
| I. Population served by groundwater supply within 3 miles of site | 0 | 6 | 0 | 18 |
| Subtotals | | | 45 | 180 |

Receptors subscore (100 x factor score subtotal/maximum score subtotal) 25

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) M
2. Confidence level (C = confirmed, S = suspected) C
3. Hazard rating (H = high, M = medium, L = low) H

Factor Subscore A (from 20 to 100 based on factor score matrix) 80

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

1.0 x 80 = 80

C. Apply physical state multiplier
Subscore B x Physical State Multiplier = Waste Characteristics Subscore

80 x 1.0 = 80

III. PATHWAYS

| Rating Factor | Factor Rating (0-3) | Multiplier | Factor Score | Maximum Possible Score |
|---|---|---|---|---|

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore 0

B. Rate the migration potential for 3 potential pathways: Surface water migration, flooding, and groundwater migration. Select the highest rating, and proceed to C.

1. Surface water migration

| | | | | |
|---|---|---|---|---|
| Distance to nearest surface water | 3 | 8 | 24 | 24 |
| Net precipitation | 1 | 6 | 6 | 18 |
| Surface erosion | 1 | 8 | 8 | 24 |
| Surface permeability | 1 | 6 | 6 | 18 |
| Rainfall intensity | 2 | 8 | 16 | 24 |
| | | Subtotals | 60 | 108 |

Subscore (100 x factor score subtotal/maximum score subtotal) 56

2. Flooding

| | | | | |
|---|---|---|---|---|
| Flooding | 0 | 1 | 0 | 3 |

Subscore (100 x factor score/3) 0

3. Groundwater migration

| | | | | |
|---|---|---|---|---|
| Depth to groundwater | 2 | 8 | 16 | 24 |
| Net precipitation | 1 | 6 | 6 | 18 |
| Soil permeability | 1 | 8 | 8 | 24 |
| Subsurface flows | 0 | 8 | 0 | 24 |
| Direct access to groundwater | 0 | 8 | 0 | 24 |
| | | Subtotals | 30 | 114 |

Subscore (100 x factor score subtotal/maximum score subtotal) 26

C. Highest pathway subscore

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore 56

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors 25
Waste Characteristics 30
Pathways 56

Total 161 divided by 3 = 54
Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score x Waste Management Practices Factor = Final Score

54 x 1.0 = 54

**APPENDIX F**
**SOIL SAMPLING RESULTS**

**ES**

**ENGINEERING-SCIENCE, INC.**

RESEARCH AND DEVELOPMENT
LABORATORY
600 BANCROFT WAY
BERKELEY, CALIFORNIA 94[illegible]
(415) 841-7353

Job No.: AT-142

Work Order No.: 1181

Client: ES Atlanta
Attention: P. C. Perry
Address: 57 Executive Park South
N. E. - Suite 590
Atlanta, Ga. 30329

Project: Illinois ANG

Attached are the analytical reports for the soil sample(s) received by this laboratory on 12-02-88.

## Sample Preparation Data

| Laboratory Sample No. | Client Sample ID | Test | Date collected | Date* extracted | Date analyzed | Date* 2nd col. |
|---|---|---|---|---|---|---|
| 88123298 | ILANG-PA2 | 8240 | 12-02-88 | | 12-07-88 | |
| 88123299 | ILANG-PA3 | 8240 | 12-02-88 | | 12-07-88 | |
| 88123300 | ILANG-PA4 | 8240 | 12-02-88 | | 12-07-88 | |
| 88123301 | ILANG-PA5 | 8240 | 12-02-88 | | 12-07-88 | |
| 88123302 | ILANG-PA6 | 8240 | 12-02-88 | | 12-07-88 | |
| 88123303 | ILANG-PA7 | 8240 | 12-02-88 | | 12-09-88 | |
| 88123304 | ILANG-PA8 | 8240 | 12-02-88 | | 12-09-88 | |
| 88123305 | ILANG-PA9 | 8240 | 12-02-88 | | 12-09-88 | |
| 88123306 | ILANG-PA10 | 8240 | 12-02-88 | | 12-09-88 | |

* If applicable

89-ILLI0100 1 CL-FRM01

A SUBSIDIARY OF THE PARSONS CORPORATION

**CASE NARRATIVE**
**QUALITY CONTROL RESULTS SUMMARY**
**SAMPLE NO(S).: 88123297-88123308**
**WORK ORDER NO.: 1181**

These soil samples were received at the ES Berkeley Laboratory on 12-02-88.

They were received cold and intact.

**CASE NARRATIVE**
**QUALITY CONTROL RESULTS SUMMARY**
**SAMPLE NO(S).: 88123297-88123308**
**WORK ORDER NO.: 1181**

Analysis of samples 88123304 through 88123308 by EPA Method 8240 showed the presence of a significant amount of mixed hydrocarbons.

ENGINEERING SCIENCE
Priority Pollutant Analysis
Volatile Organics - Method 8240
Matrix: Soil



Date Received: December 7,1988 | Work Order : 1181
Date Reported: January 17,1989 | Job No. : AT-142

For: ES:Atlanta/Illinois ANG | ATTN: Mr. P.C. Perle
Address: 57 Executive Park South, NE, Suite 590
Atlanta, Georgia 30329

| | | |
|---|---|---|
| Lab Number: | 88123298 | 88123299 |
| Sample No.: | ILANG-PH2 | ILANG-PH3 |
| Date Sampled: | 12-02-88 | 12-02-88 |
| Time Sampled: | 09:55 | 10:20 |
| Date Analyzed: | 12-07-88 | 12-07-88 |
| Percent Moisture: | 21 | 18 |

| Compound | Detection Limit ug/kg | Analytical Results (dry weight) ug/kg | ug/kg |
|---|---|---|---|
| Chloromethane | 10 | ND | ND |
| Bromomethane | 10 | ND | ND |
| Vinyl Chloride | 10 | ND | ND |
| Chloroethane | 10 | ND | ND |
| Dichloromethane | 5 | ND | ND |
| Trichlorofluoromethane | 10 | ND | ND |
| 1,1-Dichloroethene | 5 | ND | ND |
| 1,1-Dichloroethane | 5 | ND | ND |
| trans-1,2-Dichloroethene | 5 | ND | ND |
| Chloroform | 5 | ND | ND |
| 1,2-Dichloroethane | 5 | ND | ND |
| 1,1,1-Trichloroethane | 5 | ND | ND |
| Carbon Tetrachloride | 5 | ND | ND |
| Bromodichloromethane | 5 | ND | ND |
| 1,2-Dichloropropane | 5 | ND | ND |
| trans-1,3-Dichloropropene | 5 | ND | ND |
| Trichloroethene | 5 | ND | ND |
| Benzene | 5 | ND | ND |
| Dibromochloromethane | 5 | ND | ND |
| 1,1,2-Trichloroethane | 5 | ND | ND |
| cis-1,3-Dichloropropene | 5 | ND | ND |
| 2-Chloroethyl vinyl ether | 10 | ND | ND |
| Bromoform | 5 | ND | ND |
| 1,1,2,2-Tetrachloroethane | 5 | ND | ND |
| Tetrachloroethene | 5 | ND | ND |
| Toluene | 5 | ND | ND |
| Chlorobenzene | 5 | ND | ND |
| Ethylbenzene | 5 | ND | ND |
| Styrene | 5 | ND | ND |
| Total Xylenes | 5 | ND | ND |

ENGINEERING SCIENCE
Priority Pollutant Analysis
Volatile Organics - Method 8240
Matrix: Soil

Date Received: December 7,1988
Date Reported: January 13,1989

Work Order: 1181
Job No.: AT-142

For: ES:Atlanta/Illinois ANG
Address: 57 Executive Park South, NE, Suite 590
Atlanta, Georgia 30329

ATTN: Mr. F.C. Perley

| | | |
|---|---|---|
| Lab Number: | 88123298 | 88123299 |
| Sample No.: | ILANG-PA2 | ILANG-PA3 |
| Date Sampled: | 12-02-88 | 12-02-88 |
| Time Sampled: | 09:55 | 10:20 |
| Date Analyzed: | 12-07-88 | 12-07-88 |
| Percent Moisture: | 21 | 18 |

| Compound | Detection Limits ug/kg | Analytical Results (dry weight) ug/kg | ug/kg |
|---|---|---|---|
| Acetone | 100 | ND | ND |
| Acrolein | 10 | ND | ND |
| Acrylonitrile | 10 | ND | ND |
| 2-Butanone (MEK) | 100 | ND | ND |
| Carbon Disulfide | 10 | ND | ND |
| Dibromomethane | 10 | ND | ND |
| 1,4-Dichloro-2-butene | 10 | ND | ND |
| Dichlorodifluoromethane | 10 | ND | ND |
| Ethyl methacrylate | 10 | ND | ND |
| 2-Hexanone | 50 | 68 | 68 |
| Iodomethane | 10 | ND | ND |
| 4-Methyl-2-pentanone | 50 | ND | ND |
| 1,2,3-Trichloropropane | 10 | ND | ND |
| Vinyl acetate | 50 | ND | ND |

Ellen Miller
Analyst

M Burton
Laboratory Supervisor

NOTE: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

ENGINEERING SCIENCE
Priority Pollutant Analysis
Volatile Organics - Method 8240
Matrix: Soil

Date Received: December 7,1988
Date Reported: January 13,1989
Work Order : 1181
Job No. : AT-142

For: ES:Atlanta/Illinois ANG
ATTN: Mr. P.C. Perley
Address: 57 Executive Park South, NE, Suite 590
Atlanta, Georgia 30329

| | | |
|---|---|---|
| Lab Number: | 88123300 | 88123301 |
| Sample No.: | ILANG-PA4 | ILANG-PA5 |
| Date Sampled: | 12-02-88 | 12-02-88 |
| Time Sampled: | 10:45 | 11:00 |
| Date Analyzed: | 12-07-88 | 12-07-88 |
| Percent Moisture: | 21 | 13 |

| Compound | Detection Limit ug/kg | Analytical Results (dry weight) ug/kg | ug/kg |
|---|---|---|---|
| Chloromethane | 10 | ND | ND |
| Bromomethane | 10 | ND | ND |
| Vinyl Chloride | 10 | ND | ND |
| Chloroethane | 10 | ND | ND |
| Dichloromethane | 5 | ND | ND |
| Trichlorofluoromethane | 10 | ND | ND |
| 1,1-Dichloroethene | 5 | ND | ND |
| 1,1-Dichloroethane | 5 | ND | ND |
| trans-1,2-Dichloroethene | 5 | ND | ND |
| Chloroform | 5 | ND | ND |
| 1,2-Dichloroethane | 5 | ND | ND |
| 1,1,1-Trichloroethane | 5 | ND | ND |
| Carbon Tetrachloride | 5 | ND | ND |
| Bromodichloromethane | 5 | ND | ND |
| 1,2-Dichloropropane | 5 | ND | ND |
| trans-1,3-Dichloropropene | 5 | ND | ND |
| Trichloroethene | 5 | ND | ND |
| Benzene | 5 | ND | ND |
| Dibromochloromethane | 5 | ND | ND |
| 1,1,2-Trichloroethane | 5 | ND | ND |
| cis-1,3-Dichloropropene | 5 | ND | ND |
| 2-Chloroethyl vinyl ether | 10 | ND | ND |
| Bromoform | 5 | ND | ND |
| 1,1,2,2-Tetrachloroethane | 5 | ND | ND |
| Tetrachloroethene | 5 | ND | ND |
| Toluene | 5 | ND | ND |
| Chlorobenzene | 5 | ND | ND |
| Ethylbenzene | 5 | ND | ND |
| Styrene | 5 | ND | ND |
| Total Xylenes | 5 | ND | ND |

ENGINEERING SCIENCE
Priority Pollutant Analysis
Volatile Organics - Method 8240
Matrix: Soil

Date Received: December 7,1988
Date Reported: January 13,1989
Work Order: 1181
Job No.: AT-142

For: ES:Atlanta/Illinois ANG
ATTN: Mr. P.C. Perley
Address: 57 Executive Park South, NE, Suite 590
Atlanta, Georgia 30329

| | | |
|---|---|---|
| Lab Number: | 88123300 | 88123301 |
| Sample No.: | ILANG-PA4 | ILANG-PA5 |
| Date Sampled: | 12-02-88 | 12-02-88 |
| Time Sampled: | 10:45 | 11:00 |
| Date Analyzed: | 12-07-88 | 12-07-88 |
| Percent Moisture: | 21 | 13 |

| Compound | Detection Limits ug/kg | Analytical Results (dry weight) ug/kg | ug/kg |
|---|---|---|---|
| Acetone | 100 | ND | ND |
| Acrolein | 10 | ND | ND |
| Acrylonitrile | 10 | ND | ND |
| 2-Butanone (MEK) | 100 | ND | ND |
| Carbon Disulfide | 10 | ND | ND |
| Dibromomethane | 10 | ND | ND |
| 1,4-Dichloro-2-butene | 10 | ND | ND |
| Dichlorodifluoromethane | 10 | ND | ND |
| Ethyl methacrylate | 10 | ND | ND |
| 2-Hexanone | 50 | ND | ND |
| Iodomethane | 10 | ND | ND |
| 4-Methyl-2-pentanone | 50 | ND | ND |
| 1,2,3-Trichloropropane | 10 | ND | ND |
| Vinyl acetate | 50 | ND | ND |

Ellen Mills
Analyst

D.W. Burton
Laboratory Supervisor

NOTE: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

ENGINEERING SCIENCE
Priority Pollutant Analysis
Volatile Organics - Method 8240
Matrix: Soil

Date Received: December 7,1988 Work Order : 1181
Date Reported: January 13,1989 Job No. : AT-142

For: ES:Atlanta/Illinois ANG ATTN: Mr. R.C. Perley
Address: 57 Executive Park South, NE, Suite 590
Atlanta, Georgia 30329

| | | |
|---|---|---|
| Lab Number: | 88123302 | 88123303 |
| Sample No.: | ILANG-PA6 | ILANG-PA7 |
| Date Sampled: | 12-02-88 | 12-02-88 |
| Time Sampled: | 11:10 | 12:35 |
| Date Analyzed: | 12-07-88 | 12-09-88 |
| Percent Moisture: | 19 | 22 |

| Compound | Detection Limit ug/kg | Analytical Results (dry weight) ug/kg | ug/kg |
|---|---|---|---|
| Chloromethane | 10 | ND | ND |
| Bromomethane | 10 | ND | ND |
| Vinyl Chloride | 10 | ND | ND |
| Chloroethane | 10 | ND | ND |
| Dichloromethane | 5 | ND | 16 |
| Trichlorofluoromethane | 10 | ND | ND |
| 1,1-Dichloroethene | 5 | ND | ND |
| 1,1-Dichloroethane | 5 | ND | ND |
| trans-1,2-Dichloroethene | 5 | ND | ND |
| Chloroform | 5 | ND | ND |
| 1,2-Dichloroethane | 5 | ND | ND |
| 1,1,1-Trichloroethane | 5 | ND | ND |
| Carbon Tetrachloride | 5 | ND | ND |
| Bromodichloromethane | 5 | ND | ND |
| 1,2-Dichloropropane | 5 | ND | ND |
| trans-1,3-Dichloropropene | 5 | ND | ND |
| Trichloroethene | 5 | ND | ND |
| Benzene | 5 | ND | ND |
| Dibromochloromethane | 5 | ND | ND |
| 1,1,2-Trichloroethane | 5 | ND | ND |
| cis-1,3-Dichloropropene | 5 | ND | ND |
| 2-Chloroethyl vinyl ether | 10 | ND | ND |
| Bromoform | 5 | ND | ND |
| 1,1,2,2-Tetrachloroethane | 5 | ND | ND |
| Tetrachloroethene | 5 | ND | ND |
| Toluene | 5 | ND | ND |
| Chlorobenzene | 5 | ND | ND |
| Ethylbenzene | 5 | ND | ND |
| Styrene | 5 | ND | ND |
| Total Xylenes | 5 | ND | ND |

ENGINEERING SCIENCE
Priority Pollutant Analysis
Volatile Organics - Method 8240
Matrix: Soil



Date Received: December 7,1988
Date Reported: January 13,1989

Work Order: 1181
Job No.: AT-142

For: ES:Atlanta/Illinois ANG
Address: 57 Executive Park South, NE, Suite 590
Atlanta, Georgia 30329

ATTN: Mr. F.C. Perlen

| | | |
|---|---|---|
| Lab Number: | 88123302 | 88123303 |
| Sample No.: | ILANG-PA6 | ILANG-PA7 |
| Date Sampled: | 12-02-88 | 12-02-88 |
| Time Sampled: | 11:10 | 12:35 |
| Date Analyzed: | 12-07-88 | 12-09-88 |
| Percent Moisture: | 19 | 22 |

| Compound | Detection Limits ug/kg | Analytical Results (dry weight) ug/kg | ug/kg |
|---|---|---|---|
| Acetone | 100 | ND | ND |
| Acrolein | 10 | ND | ND |
| Acrylonitrile | 10 | ND | ND |
| 2-Butanone (MEK) | 100 | ND | ND |
| Carbon Disulfide | 10 | ND | ND |
| Dibromomethane | 10 | ND | ND |
| 1,4-Dichloro-2-butene | 10 | ND | ND |
| Dichlorodifluoromethane | 10 | ND | ND |
| Ethyl methacrylate | 10 | ND | ND |
| 2-Hexanone | 50 | ND | ND |
| Iodomethane | 10 | ND | ND |
| 4-Methyl-2-pentanone | 50 | ND | ND |
| 1,2,3-Trichloropropane | 10 | ND | ND |
| Vinyl acetate | 50 | ND | ND |

Ellen Gills
Analyst

RWBurton
Laboratory Supervisor

NOTE: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

# ENGINEERING SCIENCE
## Priority Pollutant Analysis
## Volatile Organics - Method 8240
## Matrix: Soil

Date Received: December 7,1988
Date Reported: January 13,1989
Work Order : 1181
Job No. : AT-142

For: ES:Atlanta/Illinois ANG
ATTN: Mr. P.C. Perley
Address: 57 Executive Park South, NE, Suite 590
Atlanta, Georgia 30329

| | | |
|---|---|---|
| Lab Number: | 88123304 | 88123305 |
| Sample No.: | ILANG-PA8 | ILANG-PA9 |
| Date Sampled: | 12-02-88 | 12-02-88 |
| Time Sampled: | 12:35 | 12:55 |
| Date Analyzed: | 12-09-88 | 12-09-88 |
| Percent Moisture: | 20 | 20 |

| Compound | Detection Limit ug/kg | Analytical Results (dry weight) ug/kg | ug/kg |
|---|---|---|---|
| Chloromethane | 10 | ND | ND |
| Bromomethane | 10 | ND | ND |
| Vinyl Chloride | 10 | ND | ND |
| Chloroethane | 10 | ND | ND |
| Dichloromethane | 5 | 15 | 6 |
| Trichlorofluoromethane | 10 | ND | ND |
| 1,1-Dichloroethene | 5 | ND | ND |
| 1,1-Dichloroethane | 5 | ND | ND |
| trans-1,2-Dichloroethene | 5 | ND | ND |
| Chloroform | 5 | ND | ND |
| 1,2-Dichloroethane | 5 | ND | ND |
| 1,1,1-Trichloroethane | 5 | ND | ND |
| Carbon Tetrachloride | 5 | ND | ND |
| Bromodichloromethane | 5 | ND | ND |
| 1,2-Dichloropropane | 5 | ND | ND |
| trans-1,3-Dichloropropene | 5 | ND | ND |
| Trichloroethene | 5 | ND | ND |
| Benzene | 5 | ND | ND |
| Dibromochloromethane | 5 | ND | ND |
| 1,1,2-Trichloroethane | 5 | ND | ND |
| cis-1,3-Dichloropropene | 5 | ND | ND |
| 2-Chloroethyl vinyl ether | 10 | ND | ND |
| Bromoform | 5 | ND | ND |
| 1,1,2,2-Tetrachloroethane | 5 | ND | ND |
| Tetrachloroethene | 5 | ND | ND |
| Toluene | 5 | ND | ND |
| Chlorobenzene | 5 | ND | ND |
| Ethylbenzene | 5 | ND | ND |
| Styrene | 5 | ND | ND |
| Total Xylenes | 5 | ND | ND |

ENGINEERING SCIENCE
Priority Pollutant Analysis
Volatile Organics - Method 8240
Matrix: Soil

Date Received: December 7,1988 Work Order: 1181
Date Reported: January 13,1989 Job No.: AT-142

For: ES:Atlanta/Illinois ANG ATTN: Mr. P.C. Perley
Address: 57 Executive Park South, NE, Suite 590
Atlanta, Georgia 30329

| | | |
|---|---|---|
| Lab Number: | 88123304 | 88123305 |
| Sample No.: | ILANG-PA8 | ILANG-PA9 |
| Date Sampled: | 12-02-88 | 12-02-88 |
| Time Sampled: | 12:35 | 12:55 |
| Date Analyzed: | 12-09-88 | 12-09-88 |
| Percent Moisture: | 20 | 20 |

| Compound | Detection Limits ug/kg | Analytical Results (dry weight) ug/kg | ug/kg |
|---|---|---|---|
| Acetone | 100 | ND | ND |
| Acrolein | 10 | ND | ND |
| Acrylonitrile | 10 | ND | ND |
| 2-Butanone (MEK) | 100 | ND | ND |
| Carbon Disulfide | 10 | ND | ND |
| Dibromomethane | 10 | ND | ND |
| 1,4-Dichloro-2-butene | 10 | ND | ND |
| Dichlorodifluoromethane | 10 | ND | ND |
| Ethyl methacrylate | 10 | ND | ND |
| 2-Hexanone | 50 | ND | ND |
| Iodomethane | 10 | ND | ND |
| 4-Methyl-2-pentanone | 50 | ND | ND |
| 1,2,3-Trichloropropane | 10 | ND | ND |
| Vinyl acetate | 50 | ND | ND |

Ellen Mills
Analyst

RSBrewster
Laboratory Supervisor

NOTE: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

ENGINEERING SCIENCE
Priority Pollutant Analysis
Volatile Organics - Method 8240
Matrix: Soil



Date Received: December 7,1988
Date Reported: January 13,1989

Work Order : 1181
Job No. : AT-142

For: ES:Atlanta/Illinois ANG
Address: 57 Executive Park South, NE, Suite 590
Atlanta, Georgia 30329

ATTN: Mr. R.C. Perle

| | |
|---|---|
| Lab Number: | 88123306 |
| Sample No.: | ILANG-PA10 |
| Date Sampled: | 12-02-88 |
| Time Sampled: | 13:05 |
| Date Analyzed: | 12-09-88 |
| Percent Moisture: | 18 |

| Compound | Detection Limit ug/kg | Analytical Results (dry weight) ug/kg | ug/kg |
|---|---|---|---|
| Chloromethane | 10 | ND | |
| Bromomethane | 10 | ND | |
| Vinyl Chloride | 10 | ND | |
| Chloroethane | 10 | ND | |
| Dichloromethane | 5 | 12 | |
| Trichlorofluoromethane | 10 | ND | |
| 1,1-Dichloroethene | 5 | ND | |
| 1,1-Dichloroethane | 5 | ND | |
| trans-1,2-Dichloroethene | 5 | ND | |
| Chloroform | 5 | ND | |
| 1,2-Dichloroethane | 5 | ND | |
| 1,1,1-Trichloroethane | 5 | ND | |
| Carbon Tetrachloride | 5 | ND | |
| Bromodichloromethane | 5 | ND | |
| 1,2-Dichloropropane | 5 | ND | |
| trans-1,3-Dichloropropene | 5 | ND | |
| Trichloroethene | 5 | ND | |
| Benzene | 5 | ND | |
| Dibromochloromethane | 5 | ND | |
| 1,1,2-Trichloroethane | 5 | ND | |
| cis-1,3-Dichloropropene | 5 | ND | |
| 2-Chloroethyl vinyl ether | 10 | ND | |
| Bromoform | 5 | ND | |
| 1,1,2,2-Tetrachloroethane | 5 | ND | |
| Tetrachloroethene | 5 | ND | |
| Toluene | 5 | ND | |
| Chlorobenzene | 5 | ND | |
| Ethylbenzene | 5 | ND | |
| Styrene | 5 | ND | |
| Total Xylenes | 5 | ND | |

ENGINEERING SCIENCE
Priority Pollutant Analysis
Volatile Organics - Method 8240
Matrix: Soil

Date Received: December 7,1988 Work Order: 1181
Date Reported: January 13,1989 Job No.: AT-142

For: ES:Atlanta/Illinois ANG ATTN: Mr. P.C. Perley
Address: 57 Executive Park South, NE, Suite 590
Atlanta, Georgia 30329

| | |
|---|---|
| Lab Number: | 88123306 |
| Sample No.: | ILANG-PA10 |
| Date Sampled: | 12-02-88 |
| Time Sampled: | 13:05 |
| Date Analyzed: | 12-09-88 |
| Percent Moisture: | 18 |

| Compound | Detection Limits ug/kg | Analytical Results (dry weight) ug/kg | ug/kg |
|---|---|---|---|
| Acetone | 100 | ND | |
| Acrolein | 10 | ND | |
| Acrylonitrile | 10 | ND | |
| 2-Butanone (MEK) | 100 | ND | |
| Carbon Disulfide | 10 | ND | |
| Dibromomethane | 10 | ND | |
| 1,4-Dichloro-2-butene | 10 | ND | |
| Dichlorodifluoromethane | 10 | ND | |
| Ethyl methacrylate | 10 | ND | |
| 2-Hexanone | 50 | ND | |
| Iodomethane | 10 | ND | |
| 4-Methyl-2-pentanone | 50 | ND | |
| 1,2,3-Trichloropropane | 10 | ND | |
| Vinyl acetate | 50 | ND | |

Eileen Mills
Analyst

R.W. Buxton
Laboratory Supervisor

NOTE: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

ENGINEERING - SCIENCE, INC.
CHAIN OF CUSTODY RECORD

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PAGE 1 OF 1

| CLIENT: ENGINEERING-SCIENCE, INC. BERKELEY | PROJECT MANAGER: P.C. Perloy | PROJ. NO.: AT-142 |
|---|---|---|
| PROJECT NAME / LOCATION: Illinois ANG - Peoria, Illinois | | |
| SAMPLER(S) (SIGNATURE) | | |

| ~~SAMPLE ID~~ PA | DATE | TIME | MATRIX | SAMPLE ~~LOCATION~~ IDENTIFICATION PW | NO. OF CONTAINERS | SW 8270 (semi volatile) | SW 8240 (Sept volatile) PEP | | | | | PRESERVED | TO BE COMPOSITED BY LAB | TURNAROUND TIME | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 12/2 | 4:15p | SOIL | ILANG-PA1 | | ✓ | | | | | 883297 | | | | semi-volatile analysis |
| | 12/2 | 9:55a | SOIL | ILANG-PA2 | | | ✓ | | | | 883298 | | | | volatile analysis |
| | 12/2 | 10:[illegible] | SOIL | ILANG-PA3 | | | ✓ | | | | 883299 | | | | |
| | 12/2 | 10:45 | SOIL | ILANG-PA4 | | | ✓ | | | | 883300 | | | | |
| | 12/2 | 11:00a | SOIL | ILANG-PA5 | | | ✓ | | | | 883301 | | | | |
| | 12/2 | 11:1?a | SOIL | ILANG-PA6 | | | ✓ | | | | 883302 | | | | |
| | 12/2 | 12:35 | SOIL | ILANG-PA7 | | | ✓ | | | | 883303 | | | | |
| | 12/2 | 12:35 | SOIL | ILANG-PA8 | | | ✓ | | | | 883304 | | | | |
| | 12/2 | 12:55 | SOIL | ILANG-PA9 | | | ✓ | | | | 883305 | | | | |
| | 12/2 | 1:05p | SOIL | ILANG-~~PA-12~~ PEP PA10 | | | ✓ | | | | 883306 | | | | |
| | 12/2 | 1:40p | SOIL | ILANG-PA11 | | | ✓ | | | | 883307 | | | | |
| | 12/2 | 1:45p | SOIL | ILANG-PA-12 | | | ✓ | | | | 883308 | | | | |

| RELINQUISHED BY: (SIGNATURE) | DATE/TIME | | RECEIVED BY: (SIGNATURE) | RELINQUISHED BY: (SIGNATURE) | DATE/TIME | RECEIVED BY: (SIGNATURE) |
|---|---|---|---|---|---|---|
| [signature] | 12/2/88 | 3:30p | | | | |
| RELINQUISHED BY: (SIGNATURE) | DATE/TIME | | RECEIVED FOR LABORATORY BY: (SIGNATURE) | DATE/TIME | | REMARKS samples recd cold + intact |
| | | | J. Brewer | 12/3/88 | 0810 | |

DISTRIBUTION: ORIGINAL ACCOMPANIES SHIPMENT; COPY TO COORDINATOR FIELD FILES

**QUALITY CONTROL RESULTS SUMMARY**
**EPA METHOD 8240**

Job No.: AT-142

Client: ES Atlanta
Attn: P. C. Perry
Address: 57 Executive Park South
N. E. - Suite 590
Atlanta, Ga. 30329

Project: Illinois ANG

QC Report for Laboratory Sample No(s):
88123298-88123308

Work Order No.: 1181
QC Report No: VOA-S-0020-89
Sample Matrix: Soil
Conc. Unit: ug/KG
Date Received 12-07-88
Date Prepared: NA
Date Analyzed: 12-12-88
Date Reported: 05-03-89
Dilution Factor: NA
% Moisture: 21

Laboratory Supervisor Approval:

| Fraction | Compound | SA | SR | MS | PR | MSD | PR | RPD | EPA RPD | QC Limits %Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| VOA | 1,1-Dichloroethene | 63.3 | ND | 43.4 | 69 | 44.7 | 71 | 3 | 22 | 59-172 |
| LAB | Trichlorethene | 63.3 | ND | 50.8 | 80 | 53.1 | 84 | 4 | 24 | 62-137 |
| SAMPLE # | Chlorobenzene | 63.3 | ND | 59.3 | 94 | 61.8 | 98 | 4 | 21 | 60-133 |
| | Toluene | 63.3 | ND | 63.6 | 100 | 60.7 | 96 | 5 | 21 | 59-139 |
| 88123300 | Benzene | 63.3 | ND | 56.3 | 89 | 59.5 | 94 | 6 | 21 | 66-142 |

NOTE: If % moisture is reported, results are presented on a dry-weight basis.

Relative Percent Difference (RPD) $= \frac{MS - MSD}{(MS + MSD)/2} \times 100$

Percent Recovery (PR) $= \frac{(MS \text{ or } MSD) - SR}{SA} \times 100$

MS = Spike Sample
MSD = Spike Duplicate
SR = Sample Result
SA = Spike Added (Concentration)

NA = Not Applicable
NC = Not Calculated
ND = Not Detected

QC-FRM2S

# METHOD BLANK SUMMARY

Job No: AT-142

Client: ES Atlanta
Attn: P. C. Perry
Address: 57 Executive Park South
N. E. - Suite 590
Atlanta, Ga. 30329

Project: Illinois ANG

Work Order No.: 1181

Sample Matrix: Soil
Conc. Unit: ug/KG
Date Reported: 5-03-89

Laboratory Supervisor Approval:

| File ID | Date Analyzed | Fraction | Instrument ID | CAS Number | Compound (HSL, TIC or Unknown) | Conc | CRDL | Inclusive Sample Nos. |
|---|---|---|---|---|---|---|---|---|
| V4921 | 12-07-88 | VOA | 2 | 75-09-2 | Dichloromethane | 16 | 5 | 88123298-88123302 |
| V436 | 12-09-88 | VOA | 2 | - | None Detected | - | - | 88123303-88123308 |

MB-FRM02

# APPENDIX G
# GLOSSARY OF TERMINOLOGY AND ABBREVIATIONS

# APPENDIX G

## GLOSSARY OF TERMINOLOGY AND ABBREVIATIONS

AF: Air Force

AGE: Aerospace Ground Equipment

ALLUVIUM: Unconsolidated sediments deposited in relatively recent geologic time by the action of water.

ANG: Air National Guard

AQUIFER: A geologic formation, group of formations, or part of a formation that is capable of yielding water to a well or spring.

AVGAS: Aviation Gasoline

B(b)F: Benzo(b)fluoranthene

BEDROCK: Any solid rock exposed at the surface of the earth or overlain by unconsolidated material.

CARCINOGEN: A cancer-causing substance.

CE: Civil Engineering

CERCLA: Comprehensive Environmental Response, Compensation and Liability Act

CFR: Code of Federal Regulations

CONFINED AQUIFER: An aquifer bounded above and below by impermeable beds or by beds of distinctly lower permeability than that of the aquifer itself.

CONTAMINANT: As defined by Section 101 (33) of SARA, shall include, but not be limited to, any element, substance, compound, or mixture, including disease-causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction), or physical malfunctions (including malfunctions in reproduction), or physical deformations in such organisms or their offsprings, except that the term "contaminant" shall not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance under:

(a) any substance designated pursuant to Section 311(b)(2)(A) of the Federal Water Pollution Control Act,
(b) any element, compound, mixture, solution, or substance designated pursuant to Section 102 of this Act,
(c) any hazardous waste having the characteristics identified under or listed pursuant to Section 3001 of the Solid Waste Disposal Act (but not including any waste the regulation of which under the Solid Waste Disposal Act has been suspended by Act of Congress),
(d) any toxic pollutant listed under Section 307(a) of the Federal Water Pollution Control Act,
(e) any hazardous air pollutant listed under Section 112 of the Clean Air Act, and
(f) any imminently hazardous chemical substance or mixture with respect to which the Administrator has taken action pursuant to Section 7 of the Toxic Substance Control Act and shall not include natural gas of pipeline quality or mixtures of natural gas and such synthetic gas.

Note: Petroleum products are covered in other regulations.

CONTAMINATION: The existence of biological, radiological, chemical, or other substances which have been identified as or may present a hazard to health or may render some portion of the environment unsuitable for use.

CYCLOTHEM: A depositional cycle containing a coal bed and, in order from base to top rocks, representing a series of environments starting with a fluvial (produced by river action) sandstone and conformably passing through fluvial, brackish, and marine before starting the next cycle.

DCM: Dichloromethane

DD: Decision Document

DEQPPM: Defense Environmental Quality Program Policy Memorandum

DERP: Defense Environmental Restoration Program

DIP: The angle at which a stratum is inclined from the horizontal

DISPOSAL OF HAZARDOUS WASTE: The discharge, deposit, injection, dumping, spilling, or placing of any hazardous waste into or on land or water so that such waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including groundwater.

DOD: Department of Defense

DOWNGRADIENT: In the direction of decreasing hydraulic static head; the direction in which groundwater flows.

DRMO: Defense Reutilization and Marketing Office
EO: Executive Order

EROSION: The wearing away of land surface by wind or water.

ES: Engineering-Science, Inc.

FAULT: A fracture in rock along which the adjacent rock surfaces are differentially displaced.

FLOOD PLAIN: The lowland and relatively flat areas adjoining inland and coastal areas of the mainland and off-shore islands, including, at a minimum, areas subject to a one percent or greater chance of flooding in any given year.

FLOW PATH: The direction or movement of groundwater and any contaminants that may be contained therein, as governed principally by the hydraulic gradient.

FOLD: A curve or bend of a planar structure such as rock strata.

FS: Feasibility Study

FS-2: No. 2 fuel oil

FTA: Firefighting Training Area

FRACTURE: Breaks in rocks due to intense folding and faulting.

GLACIAL TILL: Unsorted and unstratified drift consisting of clay, sand, gravel and boulders which is deposited by or underneath a glacier.

GROUNDWATER: Water beneath the land surface that is under atmospheric or artesian pressure.

HARDFILL: Disposal sites receiving construction debris, wood, miscellaneous spoil material.

HARM: Hazard Assessment Rating Methodology

HAZARDOUS WASTE: A solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical or infectious characteristics may cause or significantly contribute to an increase in mortality or an increase in serious, irreversible, or incapacitating reversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

HAZARDOUS WASTE GENERATION: The act or process of producing a hazardous waste.

HYDRAULIC CONDUCTIVITY: The rate of flow of water through a unit cross-section under a unit hydraulic gradient.

IEPA: Illinois Environmental Protection Agency

INFILTRATION: The movement of water through the soil surface into the ground.

IRP: Installation Restoration Program

JP-4: Jet Fuel

LEACHATE: A solution resulting from the separation or dissolving of soluble or particulate constituents from solid waste or other man-placed medium by percolation of water.

LOESS: A sediment composed predominantly of silt-size particles that has been deposited primarily by the wind.

MEK: Methyl Ethyl Ketone

MIGRATION: The movement of contaminants through pathways (groundwater, surface water, soil and air).

MONITORING WELL: A well used to measure groundwater levels and to obtain samples.

MSL: Mean Sea Level

NCP: National Contingency Plan

NDI: Non-Destructive Inspection

NET PRECIPITATION: The amount of annual precipitation minus annual evaporation.

NOAA: National Oceanic and Atmospheric Administration

NPL: *National Priorities List*

OEHL: Occupational and Environmental Health Laboratory

ORTHENT: In U.S. Department of Agriculture toxonomy, a soil suborder characterized by soils that form on recent erosion surfaces.

PA: Preliminary Assessment

PCB: Polychlorinated Biphenyls; highly toxic to aquatic life; they persist in the environment for long periods and are biologically accumulative.

PERCOLATION: Movement of moisture by gravity or hydrostatic pressure through interstices of unsaturated rock or soil.

PERMEABILITY: The capacity of a porous rock, soil or sediment for transmitting a fluid without damage to the structure of the medium.

PERSISTENCE: As applied to chemicals, those which are very stable and remain in the environment in their original form for an extended period of time.

PD-680: Cleaning solvent, safety solvent, Stoddard solvent, petroleum distillate

PL: Public Law

PLUME: The three-dimensional areal extent both vertical and horizontal of migrating contaminants: as in groundwater, the areal, vertical and horizontal concentrations within an aquifier of migrating contaminants.

POL: Petroleum, Oils, and Lubricants

PRECIPITATION: Rainfall

PS-661: Cleaning solvent

RA: Remedial Action

RCRA: Resource Conservation and Recovery Act

RD: Remedial Design

RECEPTORS: The potential impact group or resource for a waste contamination source.

RI: Remedial Investigation

SARA: Superfund Amendments and Reauthorization Act

SAX'S TOXICITY: A rating method for evaluating the toxicity of chemical materials.

SI: Site Investigation

SPILL: Any unplanned release or discharge of a hazardous waste onto or into the air, land, or water.

STORAGE OF HAZARDOUS WASTE: Containment, either on a temporary basis or for a longer period, in such a manner as not to constitute disposal of such hazardous waste.

SURFACE WATER: Water exposed on ground surface, i.e., lakes, streams, rivers, etc.

SWALE: A low lying or depressed and often wet stretch of land.

TABLELAND: Land elevated much above the level of the sea and generally offering no considerable irregularities of surface.

TASG: Tactical Air Support Group

TCE: Trichloroethene or Trichloroethylene

TOXICITY: The ability of a material to produce injury or disease upon exposure, ingestion, inhalation, or assimilation by a living organism.

TREATMENT OF HAZARDOUS WASTE: Any method, technique, or process including neutralization designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize the waste or so as to render the waste nonhazardous.

UPGRADIENT: In the direction of increasing hydraulic static head; the direction opposite to the prevailing flow of groundwater.

USAF: United States Air Force

USC: United States Code

U.S. EPA: U.S. Environmental Protection Agency

UST: Underground Storage Tank

WATER TABLE: Surface of a body of unconfined groundwater at which the pressure is equal to that of the atmosphere.

# APPENDIX H
# REFERENCES

## APPENDIX H
## REFERENCES

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